

Random Activation of Gene Expression (RAGE)

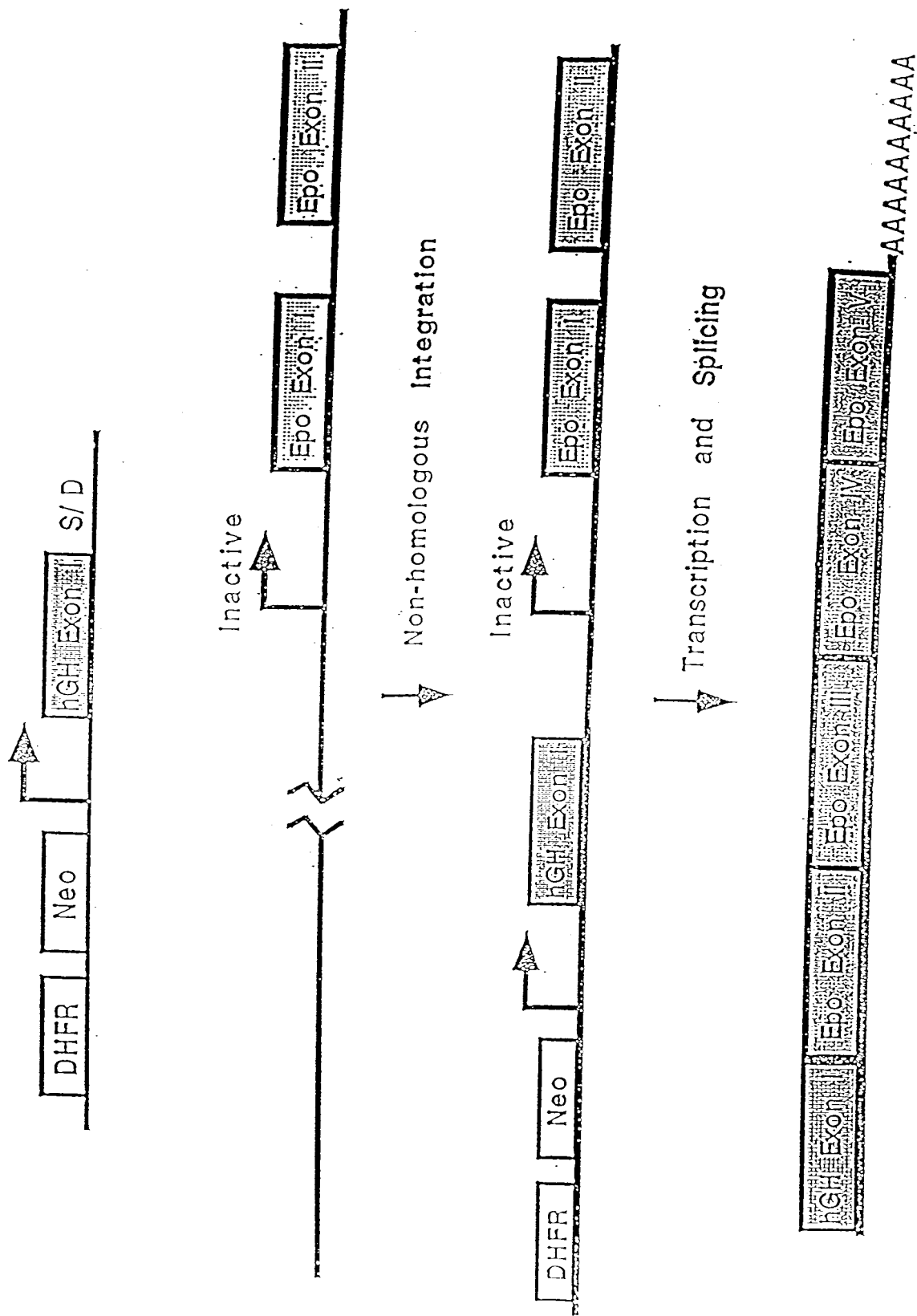


FIGURE 1

Activation Constructs without Translation Start Codons

Construct #



1



2



Untranslated

S/D Splice Donor

Fig. 2

Construct #

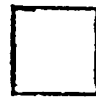
3-5

6-8

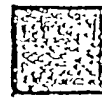
9-11

12-14

15-17



Untranslated



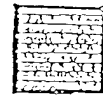
Translated



Secretion
Signal
Sequence



Protease
Cleavage
Site



Epitope
Tag

S/D Splice Donor

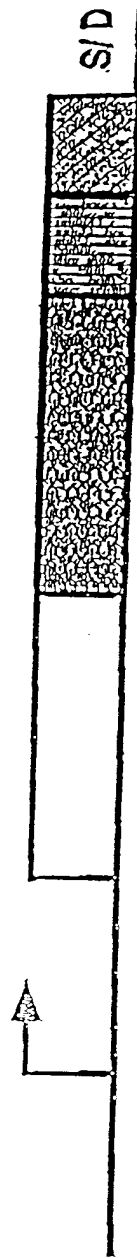
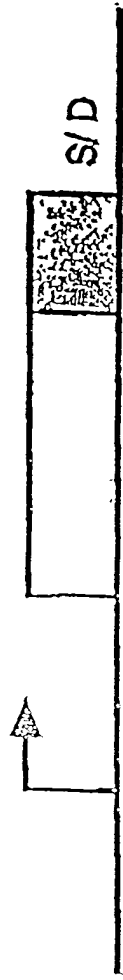


Fig. 3

pRIG-1

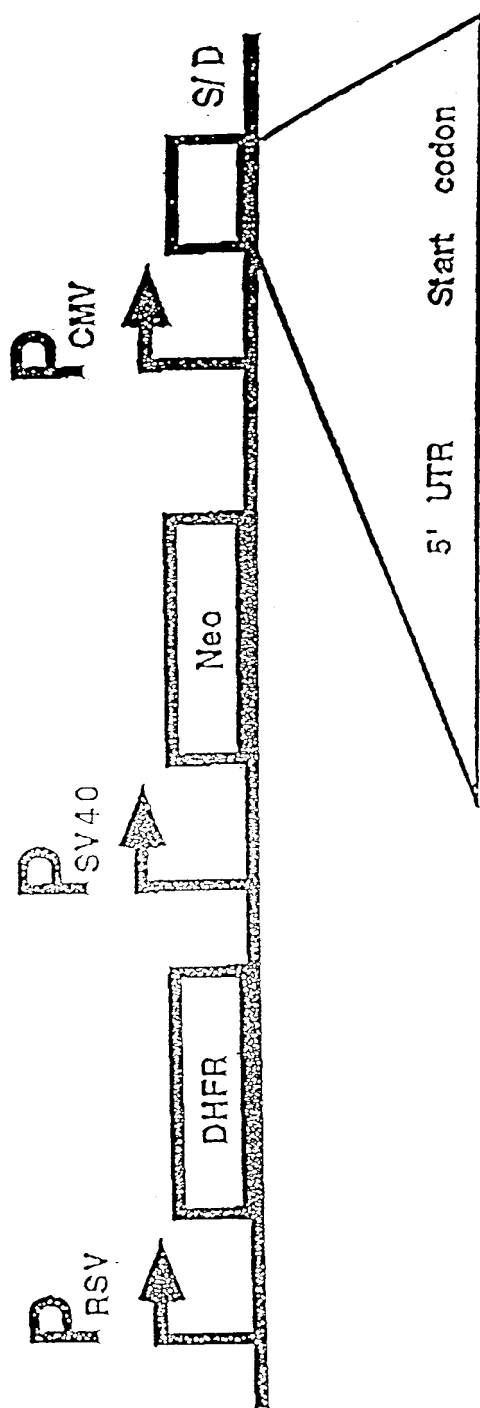


FIG. 4

5'AGATCTTCAATATTGGCCATTAGCCATATTATTCATTGGTTATATAGCATAAATC
 AATATTGGCTATTGGCCATTGCATA
 CGTTGTATCTATATCATAATATGTACATTTATATTGGCTCATGTCCAATATGACCG
 CCATGTTGGCATTGATTATTGACT
 AGTTATTAATAGTAATCAATTACGGGGTCATTAGTTCATAGCCCATATATGGAGT
 TCCGCGTTACATAACTTACGGTAAA
 TGGCCCGCCTGGCTGACCGCCCAACGACCCCGCCCATGACGTCAATAATGACG
 TATGTTCCCATAGTAACGCCAATAG
 GGACTTTCCATTGACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGGC
 AGTACATCAAGTGTATCATATGCCA
 AGTCCGCCCCCTATTGACGTCAATGACGGTAAATGGCCCGCCTGGCATTATGCCC
 AGTACATGACCTTACGGGACTTTCC
 TACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGGTGATGCGGTTTT
 GGCAGTACACCAATGGGCGTGGAT
 AGCGGTTTGACTCACGGGGATTTCCTCAAGTCTCCACCCCATGACGTCAATGGGAG
 TTTGTTTTGGCACC AAAATCAACGG
 GACTTTCCAAAATGTCGTAACAACTGCGATCGCCCGCCCGTTGACGCAAATGGG
 CGGTAGGCGTGTACGGTGGGAGGTC
 TATATAAGCAGAGCTCGTTTGTGAACCGTCAGATCACTAGAAGCTTTATTGCGG
 TAGTTTATCACAGTTAAATTGCTAA
 CGCAGTCAGTGCTTCTGACACAACAGTCTCGAACTTAAGCTGCAGTGACTCTCTT
 AATTAAGTCCACCAAGTCTCACTCA
 GTTCCTTTTGCCTCCACCAAGTCTCACTTCAGTTCCTTTTGCATGAAGAGCTCAGAA
 TCAAAAGAGGAAACCAACCCCTAA
 GATGAGCTTTCCATGTAAATTTGTAGCCAGCTTCCTTCTGATTTTCAATGTTTCTT
 CCAAAGGTGCAGTCTCCAAAGAGA
 TTACGAATGCCTTGGAACCTGGGGTGCCTTGGGTCAGGACATCAACTTGGACAT
 TCCTAGTTTTCAAATGAGTGATGAT
 ATTGACGATATAAAATGGGAAAAAACTTCAGACAAGAAAAAGATTGCACAATTCA
 GAAAAGAGAAAAGAGACTTTCAAGGA
 AAAAGATACATATAAGCTATTTAAAAATGGAAGTCTGAAAATTAAGCATCTGAAG
 ACCGATGATCAGGATATCTACAAGG
 TATCAATATATGATACAAAAGGAAAAAATGTGTTGGAAAAAATATTTGATTTGAA
 GATTCAAGAGAGGGTCTCAAAACCA
 AAGATCTCCTGGACTTGTATCAACACAACCCTGACCTGTGAGGTAATGAATGGAA
 CTGACCCCGAATTAAACCTGTATCA
 AGATGGGAAACATCTAAAACCTTCTCAGAGGGTCATCACACACAAGTGGACCACC
 AGCCTGAGTGCAAAATTCAAGTGCA
 CAGCAGGGAAACAAAGTCAGCAAGGAATCCAGTGTCGAGCCTGTCAGCTGTCCAG
 AGAAAGGGATCCAGGTGAGTAGGGCC
 CGATCCTTCTAGAGTCGAGCTCTCTTAAGGTAGCAAGGTTACAAGACAGGTTTAA
 GGAGACCAATAGAACTGGGCTTGT
 CGAGACAGAGAAGACTCTTGCGTTTCTGATAGGCACCTATTGGTCTTACGCGGCC
 GCGAATTCCAAGCTTGAGTATTCTA
 TCGTGTACCTAAATAACTTGGCGTAATCATGGTCATATCTGTTTCTGTGTGAA
 ATTGTTATCCGCTCACAATTCCACA
 CAACATACGAGCCGGAAGCATAAAGTGTAAGCCTGGGGTGCCTAATGAGTGAG
 CTAACCTACATTAATTGCGTTGCGCGATGCTTCCATTTTGTGAGGGTTAATGC-

Figure 5A

TTCGAGAAGACATGATAAGATACATTGATGAGTTTGGACAAACCACAACAAGAAT
 GCAGTGAAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAA
 CCATTATAAGCTGCAATAAACA
 AGTTAACAACAACAATTGCATTTCATTTTATGTTTCAGGTTTCAGGGGGAGATGTGG
 GAGGTTTTTTTAAAGCAAGTAAACC
 TCTACAAATGTGGTAAAATCCGATAAGGATCGATTCCGGAGCCTGAATGGCGAAT
 GGACGCGCCCTGTAGCGGCGCATTA
 AGCGCGGCGGGTGTGGTGGTTACGCGCACGTGACCGCTACACTTGCCAGCGCCC
 TAGCGCCCGCTCCTTTTCGCTTTCTTC
 CCTTCCTTTCTCGCCACGTTTCGCGGGCTTTCCCCGTCAAGCTCTAAATCGGGGGC
 TCCCTTTAGGGTTCCGATTTAGTGC
 TTTACGGCACCTCGACCCCAAAAACTTGATTAGGGTGATGGTTCACGTAGTGGG
 CCATCGCCCTGATAGACGGTTTTTC
 GCCCTTTGACGTTGGAGTCCACGTTCTTTAATAGTGGACTCTTGTTCCAAACTGG
 AACAACACTCAACCCTATCTCGGTC
 TATTCTTTTGATTTATAAGGGATTTTGCCGATTTTCGGCCTATTGGTTAAAAAATGA
 GCTGATTTAACAATAATTTAACGC
 GAATTTTAACAATAATTTAACGCTTACAATTTTCGCCTGTGTACCTTCTGAGGCGG
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 CAGTTAGGGTGTGGAAAGTCCCCAGGCTCCCCAGCAGGCAGAAGTATGCAAAGC
 ATGCATCTCAATTAGTCAGCAACCAG
 GTGTGGAAAGTCCCCAGGCTCCCCAGCAGGCAGAAGTATGCAAAGCATGCATCT
 CAATTAGTCAGCAACCATAAGTCCCGC
 CCCTAACTCCGCCCATCCCGCCCTAACTCCGCCCAGTTCCGCCCATTTCTCCGCC
 CCAATGGCTGACTAATTTTTTTTATT
 TATGCAGAGGCCGAGGCCGCTCGGCCTCTGAGCTATTCCAGAAGTAGTGAGGA
 GGCTTTTTTTGGAGGCCCTAGGCTTTTG
 CAAAAAGCTTGATTCTTCTGACACAACAGTCTCGAACTTAAGGCTAGAGCCACCA
 TGATTGAACAAGATGGATTGCACGC
 AGGTTCTCCGGCCGCTTGGGTGGAGAGGCTATTCCGGCTATGACTGGGGCACAACAG
 ACAATCGGCTGCTCTGATGCCGCCG
 TGTTCGGCTGTGACGCGAGGGGCGCCCGGTTCTTTTTGTCAAGACCGACCTGTC
 CGGTGCCCTGAATGAACTGCAGGAC
 GAGGCAGCGCGGCTATCGTGGCTGGCCACGACGGGCGTTCTTGCGCAGCTGTG
 CTCGACGTTGTCACTGAAGCGGGAAG
 GGACTGGCTGCTATTGGGCGAAGTGCCGGGGCAGGATCTCCTGTGATCTCACCTT
 GCTCCTGCCGAGAAAGTATCCATCA
 TGGCTGATGCAATGCGGCGGCTGCATACGCTTGATCCGGCTACCTGCCCATTGGA
 CCACCAAGCGAAACATCGCATCGAG
 CGAGCACGTACTCGGATGGAAGCCGGTCTTGTGATCAGGATGATCTGGACGAA
 GAGCATCAGGGGCTCGCGCCAGCCGA
 ACTGTTCCGCCAGGCTCAAGGCGCGCATGCCCGACGGCGAGGATCTCGTCGTGAC
 CCATGGCGATGCCTGCTTGCCGAATA
 TCATGGTGGAAAATGGCCGCTTTTCTGGATTCATCGACTGTGGCCGGCTGGGTGT
 GGCGGACCGCTATCAGGACATAGCG
 TTGGCTACCCGTGATATTGCTGAAGAGCTTGGCGGCGAATGGGCTGACCGCTTCC
 TCGTGCTTTACGGTATCGCCGCTCC
 CGATTGCGAGCGCATCGCCTTCTATCGCCTTCTTGACGAGTTCTTCTGAGCGGGA
 CTCTGGGGTTTCGAAATGACCGACCAAGCGACGCCCAACCTGCCATCACGATGGC-

Figure 5B

CGCAATAAAATATCTTTATTTTCATTACATCTGTGTGTTGGTTTTTTGTGTGAAGA.
 TCCGCGTA-
 TGGTGCACTCTCAGTACAATCTGCTCTGATGCCGCATAGTTAAGCCAGCCCCGAC
 ACCCGCCAACAC
 CCGCTGACGCGCCCTGACGGGCTTGTCTGCTCCCGGCATCCGCTTACAGACAAGC
 TGTGACCGTCTCCGGGAGCTGCATG
 TGTGAGAGGTTTTACCGTCATCACCAGAAACGCGCGAGACGAAAGGGCCTCGTGA
 TACGCCTATTTTTATAGGTTAATGT
 CATGATAATAATGGTTTCTTAGACGTCAGGTGGCACTTTTCGGGGAAATGTGCGC
 GGAACCCCTATTTGTTTATTTTTCT
 AAATACATTCAAATATGTATCCGCTCATGAGACAATAACCCTGATAAATGCTTCA
 ATAATATTGAAAAAGGAAGAGTATG
 AGTATTCAACATTTCCGTGTCGCCCTTATTCCCTTTTTTGCGGCATTTTGCCTTCC.
 TGTTTTTGCTCACCCAGAAACGCT
 GGTGAAAGTAAAAGATGCTGAAGATCAGTTGGGTGCACGAGTGGGTACATCGA
 ACTGGATCTCAACAGCGGTAAGATCC
 TTGAGAGTTTTTCGCCCCGAAGAACGTTTTCCAATGATGAGCACTTTTAAAGTTCT
 GCTATGTGGCGCGGTATTATCCCGT
 ATTGACGCCGGGCAAGAGCAACTCGGTGCGCCGCATACACTATTCTCAGAATGACT
 TGGTTGAGTACTCACCAGTCAACAGA
 AAAGCATCTTACGGATGGCATGACAGTAAGAGAATTATGCAGTGCTGCCATAACC
 ATGAGTGATAACACTGCGGCCAACT
 TACTTCTGACAACGATCGGAGGACCGAAGGAGCTAACCGCTTTTTTGCACAACAT
 GGGGGATCATGTAACCTCGCCTTGAT
 CGTTGGGAACCGGAGCTGAATGAAGCCATACCAAACGACGAGCGTGACACCACG
 ATGCCTGTAGCAATGGCAACAACGTT
 GCGCAAACCTATTAACCTGGCGAACTACTTACTCTAGCTTCCCGGCAACAATTAATA
 GACTGGATGGAGGCGGATAAAGTTG
 CAGGACCACTTCTGCGCTCGGCCCTTCCGGCTGGCTGGTTTATTGCTGATAAATC
 TGGAGCCGGTGAGCGTGGGTCTCGC
 GGTATCATTGCAGCACTGGGGCCAGATGGTAAGCCCTCCCGTATCGTAGTTATCT
 ACACGACGGGGAGTCAGGCAACTAT
 GGATGAACGAAATAGACAGATCGCTGAGATAGGTGCCTCACTGATTAAAGCATTGG
 TAACTGTCAGACCAAGTTTACTCAT
 ATATACTTTAGATTGATTTAAAACCTTCATTTTTAATTTAAAAGGATCTAGGTGAAG
 ATCCTTTTTGATAATCTCATGACC
 AAAATCCCTTAACGTGAGTTTTCGTTCCACTGAGCGTCAGACCCCGTAGAAAAGA
 TCAAAGGATCTTCTTGAGATCCTTT
 TTTTCTGCGCGTAATCTGCTGCTTGCAAACAAAAAAACCACCGCTACCAGCGGTG
 GTTTGTTTGCCGGATCAAGAGCTAC
 CAACTCTTTTTCCGAAGGTAACCTGGCTTCAGCAGAGCGCAGATACCAAATACTGT
 CCTTCTAGTGTAAGCCGTAGTTAGGC
 CACCACTTCAAGAACTCTGTAGCACCGCTACATACCTCGCTCTGCTAATCCTGT
 TACCAAGTGGCTGCTGCCAGTGGCGA
 TAAGTCGTGCTTACCGGGTTGGACTCAAGACGATAGTTACCGGATAAGGCGCAG
 CGGTCGGGCTGAACGGGGGGTTCTG
 GCACACAGCCCAGCTTGGAGCGAACGACCTACACCGAACTGAGATACCTACAGC
 GTGAGCTATGAGAAAGCGCCACGCTT
 CCCGAAGGGAGAAAGGCGGACAGGTATCCGGTAAGCGGCAGGGTCGGAACAGG-

Figure 5C

AGAGCGCACGAGGGAGGTTCCAGGGGGAAACGCCTGGTATCTTTATAGTCCTGTC
GGGTTTCGCCACCTCTGACTTGAGCGTCGATTTTTGTGATGCTCGTCAGGGG
GGCGGAGCCTATGGAAAAACGCCAGCAACGCGGCCTTTTTACGGTTCCTGGCCTT
TTGCTGGCCTTTTGCTCACATGGCT
CGAC3'

Figure 5D

5'AGATCTTCAATATTGGCCATTAGCCATATTATTCATTGGTTATATAGCATAAATC
 AATATTGGCTATTGGCCATTGCAT
 ACGTTGTATCTATATCATAATATGTACATTTATATTGGCTCATGTCCAATATGACC
 GCCATGTTGGCATTGATTATTGAC
 TAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTCATAGCCCATATATGGAG
 TTCCGCGTTACATAACTTACGGTAA
 ATGGCCCGCCTGGCTGACCGCCCAACGACCCCGCCCATTGACGTCAATAATGAC
 GTATGTTCCCATAGTAACGCCAATA
 GGGACTTTCCATTGACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGG
 CAGTACATCAAGTGTATCATATGCC
 AAGTCCGCCCCCTATTGACGTCAATGACGGTAAATGGCCCGCCTGGCATTATGCC
 CAGTACATGACCTTACGGGACTTTC
 CTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGGTGATGCGGTT
 TTGGCAGTACACCAATGGGCGTGGA
 TAGCGGTTTGACTCACGGGGATTTCCAAGTCTCCACCCCATTGACGTCAATGGGA
 GTTTGTTTTGGCACCAAATCAACG
 GGACTTTCCAAATGTGCTAACAACCTGCGATCGCCCGCCCCGTTGACGCAAATGG
 GCGGTAGGCGTGTACGGTGGGAGGT
 CTATATAAGCAGAGCTCGTTTAGTGAACCGTCAGATCACTAGAAGCTTTATTGCG
 GTAGTTTATCACAGTTAAATTGCTA
 ACGCAGTCAGTGCTTCTGACACAACAGTCTCGAACTTAAGCTGCAGTGACTCTCT
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 AGTTCCTTTTGCTCCACCAGTCTCACTTCAGTTCCTTTTGCATGAAGAGCTCAGA
 ATCAAAAGAGGAAACCAACCCCTA
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 AAGATGGGAAACATCTAAACTTTCTCAGAGGGTCATCACACACAAGTGGACCAC
 CAGCCTGAGTGCAAAATTCAAGTGC
 ACAGCAGGGAACAAAGTCAGCAAGGAATCCAGTGTCGAGCCTGTCAGCTGTCCA
 GAGAAAGGGGATCCCAGGTGAGTAGGG
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 AAGGAGACCAATAGAACTGGGCTT
 GTCGAGACAGAGAAGACTCTTGCGTTTCTGATAGGCACCTATTGGTCTTACGCGG
 CCGCGAATTCCAAGCTTGAGTATTC
 TATCGTGTACCTAAATAACTTGGCGTAATCATGGTCATATCTGTTTCCTGTGTGA
 AATTGTTATCCGCTCACAATTCCA
 CACAACATACGAGCCGGAAGCATAAAGTGTAAGCCTGGGGTGCCTAATGAGTG
 AGCTAACTCACATTAATTGCGTTGCG
 CGATGCTTCCATTTTGTGAGGGTTAATGCTTCGAGAAGACATGATAAGATAACATT
 GATGAGTTTGGACAAACCACAACAAGAATGCAGTGAAAAAAATGCTTTATTGT-

Figure 6A

GAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAA
 CAAGTTAACAACAACAATTGCATTCATTTTATGTTTCAGGTTTCAGGGGGAGATGT
 GGGAGGTTTTTTTAAAGCAAGTAAAA
 CCTCTACAAATGTGGTAAAAATCCGATAAGGATCGATTCCGGAGCCTGAATGGCGA
 ATGGACGCGCCCTGTAGCGGCGCAT
 TAAGCGCGGCGGGTGTGGTGGTTACGCGCACGTGACCGCTACACTTGCCAGCGC
 CCTAGCGCCCGCTCCTTTTCGCTTTCT
 TCCCTTCCTTTCTCGCCACGTTTCGCCGGCTTTCCCGTCAAGCTCTAAATCGGGG
 GCTCCCTTTAGGGTTCCGATTTAGT
 GCTTTACGGCACCTCGACCCCAAAAACTTGATTAGGGTGATGGTTACGTTAGTG
 GGCCATCGCCCTGATAGACGGTTTT
 TCGCCCTTTGACGTTGGAGTCCACGTTCTTTAATAGTGGACTCTTGTTCCAAACTG
 GAACAACACTCAACCCTATCTCG
 TCTATTCTTTTGATTATAAGGGATTTTGCCGATTTCCGGCCTATTGGTTAAAAAAT
 GAGCTGATTTAACAATAAATTTAAC
 GCGAATTTTAACAATAAATTTAACGCTTACAATTTCCGCTGTGTACCTTCTGAGGC
 GGAAAGAACCAGCTGTGGAATGTGT
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 GCATGCATCTCAATTAGTCAGCAACC
 AGGTGTGGAAAGTCCCCAGGCTCCCCAGCAGGCAGAAGTATGCAAAGCATGCAT
 CTCAATTAGTCAGCAACCATAGTCCC
 GCCCCTAACTCCGCCCATCCCGCCCCCTAACTCCGCCAGTTCCGCCATTCTCCG
 CCCCATGGCTGACTAATTTTTTTTA
 TTTATGCAGAGGCCGAGGCCGCTCGGCCCTCTGAGCTATTCCAGAAGTAGTGAGG
 AGGCTTTTTTGGAGGCCTAGGCTTT
 TGCAAAAAGCTTGATTCTTCTGACACAACAGTCTCGAACTTAAGGCTAGAGCCAC
 CATGATTGAACAAGATGGATTGCAC
 GCAGGTTCTCCGGCCGCTTGGGTGGAGAGGCTATTCCGGCTATGACTGGGCACAAC
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 CGTGTTCCGGCTGTGACGCGCAGGGGCGCCCGGTTCTTTTTGTCAAGACCGACCTG
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 TTGCTCCTGCCGAGAAAGTATCCAT
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 TATCATGGTGGAATAATGGCCGCTTTTCTGGATTCATCGACTGTGGCCGGCTGGGT
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 TTGGCGGCGAATGGGCTGACCGCTTCTCTGCTTTACGGTATCGCCGCT
 CCGGATTTCGACGCGCATCGCCTTCTATCGCCTTCTTGACGAGTTCTTCTGAGCGG
 GACTCTGGGGTTCGAAATGACCGAC
 CAAGCGACGCCCAACCTGCCATCACGATGGCCGCAATAAAATATCTTTATTTTCA
 TTACATCTGTGTGTTGGTTTTTTGT
 GTGAAGATCCGCGTATGGTGCACCTCTCAGTACAATCTGCTCTGATGCCGCATAGT
 TAAGCCAGCCCCGACACCCGCCAACACCCGCTGACGCGCCCTGACGGGCT-

Figure 6B

TGTCTGCTCCCGGCATCCGCTTACAGACAAGCTGTGACCGTCTCCGGGAGCTGCA
 TGTGTCAGAGGTTTTACCGTCATCACCGAAACGCGCGAGACGAAAGGGCCTCGT
 GATACGCCTATTTTTATAGGTTAAT
 GTCATGATAATAATGGTTTCTTAGACGTCAGGTGGCACTTTTCGGGGAAATGTGC
 GCGGAACCCCTATTTGTTTATTTT
 CTAAATACATTCAAATATGTATCCGCTCATGAGACAATAACCCTGATAAATGCTT
 CAATAATATTGAAAAAGGAAGAGTA
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 GAACTGGATCTCAACAGCGGTAAGAT
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 ATGGATGAACGAAATAGACAGATCGCTGAGATAGGTGCCTCACTGATTAAGCATT
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 AGATCCTTTTTTGATAATCTCATGA
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 TGGTTTGTTTGCCGGATCAAGAGCT
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 GAGAGCGCACGAGGGAGCTTCCAGGG
 GGAAACGCCTGGTATCTTTATAGTCCTGTCGGGTTTCGCCACCTCTGACTTGAGC
 GTCGATTTTTGTGATGCTCGTCAGG
 GGGGCGGAGCCTATGAAAAACGCCAGCAACGCGGCCTTTTTACGGTTCCTGGC
 CTTTTGCTGGCCTTTTGCTCACATGG
 CTCGAC3'

Figure 6C

5'AGATCTTCAATATTGGCCATTAGCCATATTATTCATTGGTTATATAGCATAAATC
 AATATTGGCTATTGGCCATTGCAT
 ACGTTGTATCTATATCATAATATGTACATTTATATTGGCTCATGTCCAATATGACC
 GCCATGTTGGCATTGATTATTGAC
 TAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTCATAGCCCATATATGGAG
 TTCCGCGTTACATAACTTACGGTAA
 ATGGCCCGCCTGGCTGACCGCCCAACGACCCCCGCCCATTGACGTCAATAATGAC
 GTATGTTCCCATAGTAACGCCAATA
 GGGACTTTCCATTGACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGG
 CAGTACATCAAGTGTATCATATGCC
 AAGTCCGCCCCCTATTGACGTCAATGACGGTAAATGGCCCGCCTGGCATTATGCC
 CAGTACATGACCTTACGGGACTTTC
 CTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGGTGATGCGGTT
 TTGGCAGTACACCAATGGGCGTGGA
 TAGCGGTTTGACTCACGGGGATTTCGAAGTCTCCACCCCATTGACGTCAATGGGA
 GTTTGTTTTTGGCACCAAAATCAACG
 GGACTTTCCAAAATGTCGTAACAACCTGCGATCGCCCGCCCCGTTGACGCAAATGG
 GCGGTAGGCGTGTACGGTGGGAGGT
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 GTAGTTTATCACAGTTAAATTGCTA
 ACGCAGTCAGTGCTTCTGACACAACAGTCTCGAACTTAAGCTGCAGTGACTCTCT
 TAATTAACCTCCACCAGTCTCACTTC
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 TTCCTAGTTTTTCAAATGAGTGATGA
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 AGAAAAGAGAAAGAGACTTTCAAGG
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 GACCGATGATCAGGATATCTACAAG
 GTATCAATATATGATACAAAAGGAAAAAATGTGTTGGAAAAAATATTTGATTTGA
 AGATTCAAGAGAGGGTCTCAAAACC
 AAAGATCTCCTGGACTTGTATCAACACAACCCTGACCTGTGAGGTAATGAATGGA
 ACTGACCCCGAATTAAACCTGTATC
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 CAGCCTGAGTGCAAAATTCAAGTGC
 ACAGCAGGGAACAAAGTCAGCAAGGAATCCAGTGTGAGCCTGTCAGCTGTCCA
 GAGAAAGGGATCCACAGGTGAGTAGG
 GCCCGATCCTTCTAGAGTCGAGCTCTCTTAAGGTAGCAAGGTTACAAGACAGGTT
 TAAGGAGACCAATAGAAACTGGGCT
 TGTCGAGACAGAGAAGACTCTTGCGTTTCTGATAGGCACCTATTGGTCTTACGCG
 GCCGCGAATTCCAAGCTTGAGTATT
 CTATCGTGTACCTAAATAACTTGGCGTAATCATGGTCATATCTGTTTCCTGTGTG
 AAATTGTTATCCGCTCACAATTCC
 ACACAACATACGAGCCGGAAGCATAAAGTGTAAGCCTGGGGTGCCTAATGAGT
 GAGCTAACTCACATTAAATTGCGTTGC
 GCGATGCTTCCATTTTGTGAGGGTTAATGCTTCGAGAAGACATGATAAGATACAT
 TGATGAGTTTGGACAAACCACAACA AGAATGCAGTGAATAAATGTC-

Figure 7A

TTTATTTGTGAAATTTGTGATG
 CTATTGCTTTATTTGTAACCATTATAAGCTGCAATAA
 ACAAGTTAACAACAACAATTGCATTTCATTTTATGTTTCAGGTTTCAGGGGGAGATG
 TGGGAGGTTTTTTTAAAGCAAGTAAA
 ACCTCTACAAATGTGGTAAAATCCGATAAGGATCGATTCCGGAGCCTGAATGGCG
 AATGGACGCGCCCTGTAGCGGCGCA
 TTAAGCGCGGCGGGTGTGGTGGTTACGCGCACGTGACCGCTACACTTGCCAGCGC
 CCTAGCGCCCGCTCCITTCGCTTC
 TTCCCTTCCTTTCTCGCCACGTTTCGCCGGCTTTCCCGTCAAGCTCTAAATCGGGG
 GCTCCCTTTAGGGTTCCGATTTAG
 TGCTTTACGGCACCTCGACCCCAAAAACTTGATTAGGGTGATGGTTCACGTAGT
 GGGCCATCGCCCTGATAGACGGTTT
 TTCGCCCTTTGACGTTGGAGTCCACGTTCTTTAATAGTGGACTCTTGTTCCAACT
 GGAACAACACTCAACCCTATCTCG
 GTCTATTCTTTTGATTTATAAGGGATTTTGCCGATTTCCGGCCTATTGGTTAAAAA
 TGAGCTGATTTAACAATAATTTAA
 CGGAATTTTAACAAAATATTAACGCTTACAATTTGCCTGTGTACCTTCTGAGG
 CGGAAAGAACCAGCTGTGGAATGTG
 TGTCAGTTAGGGTGTGGAAAGTCCCCAGGCTCCCCAGCAGGCAGAAAGTATGCAA
 AGCATGCATCTCAATTAGTCAGCAAC
 CAGGTGTGGAAAGTCCCCAGGCTCCCCAGCAGGCAGAAAGTATGCAAAGCATGCA
 TCTCAATTAGTCAGCAACCATAGTCC
 CGCCCCTAACTCCGCCCATCCCGCCCCTAACTCCGCCCAGTTCCGCCCATTTCTCC
 GCCCATGGCTGACTAATTTTTTTT
 ATTTATGCAGAGGCCGAGGCCGCTCGGCCTCTGAGCTATTCCAGAAGTAGTGAG
 GAGGCTTTTTTGGAGGCCCTAGGCTT
 TTGCAAAAAGCTTGATTCTTCTGACACAACAGTCTCGAACITTAAGGCTAGAGCCA
 CCATGATTGAACAAGATGGATTGCA
 CGCAGGTTCTCCGGCCGCTTGGGTGGAGAGGCTATTCCGGCTATGACTGGGCACAA
 CAGACAATCGGCTGCTCTGATGCCG
 CCGTGTTCCGGCTGTGACGCGAGGGGCGCCCGGTTCTTTTTGTCAAGACCGACCT
 GTCCGGTGCCCTGAATGAACTGCA
 GACGAGGCAGCGCGGCTATCGTGGCTGGCCACGACGGGCGTTCTTGCGCAGCT
 GTGCTCGACGTTGTCACTGAAGCGGG
 AAGGGACTGGCTGCTATTGGGCGAAGTGCCGGGGCAGGATCTCCTGTCATCTCAC
 CTTGCTCCTGCCGAGAAAGTATCCA
 TCATGGCTGATGCAATGCGGCGGCTGCATACGCTTGATCCGGCTACCTGCCCAT
 CGACCACCAAGCGAAACATCGCATC
 GAGCGAGCACGTAAGGATGGAAGCCGGTCTTGTCGATCAGGATGATCTGGAC
 GAAGAGCATCAGGGGCTCGCGCCAGC
 CGAACTGTTCCGCCAGGCTCAAGGCGCGCATGCCCGACGGCGAGGATCTCGTCGT
 GACCCATGGCGATGCCTGCTTGCCGA
 ATATCATGGTGGAAAATGGCCGCTTTTCTGGATTTCATCGACTGTGGCCGGCTGGG
 TGTGGCGGACCGCTATCAGGACATA
 GCGTTGGCTACCCGTGATATTGCTGAAGAGCTTGGCGGCGAATGGGCTGACCGCT
 TCCTCGTGCTTTACGGTATCGCCG
 TCCCGATTTCGACGCGCATCGCCTTCTATCGCCTTCTTGACGAGTTCTTCTGAGCG
 GGAATCTGGGGTTTGAATGACCGA
 CCAAGCGACGCCCAACCTGCCATCACGATGGCCGCAATAAAATATCTTTATTTTC
 ATTACATCTGTGTGTTGGTTTTTTGTGTGAAGATCCGCGTATGGTGCACCTCTC

Figure 7B

AGTACAATCTGCTCTGATGCCGCATAGTTAAGCCAGCCCCGACACCCGCCAA
 CACCCGCTGACGCGCCCTGACGGGCTTGTCTGCTCCCGGCATCCGCTTACAGACA
 AGCTGTGACCGTCTCCGGGAGCTGC
 ATGTGTCAGAGGTTTTACCGTTCATCACCGAAACGCGCGAGACGAAAGGGCCTCG
 TGATACGCCTATTTTTATAGGTTAA
 TGTTCATGATAATAATGGTTTTCTTAGACGTCAGGTGGCACTTTTCGGGGAAATGTG
 CGCGGAACCCCTATTTGTTTATTTT
 TCTAAATACATTCAAATATGTATCCGCTCATGAGACAATAACCCTGATAAATGCT
 TCAATAATATTGAAAAAGGAAGAGT
 ATGAGTATTCAACATTTCCGTGTCGCCCTTATTCCCTTTTTTGCGGCATTTTGCCT
 TCCTGTTTTTTGCTCACCCAGAAAC
 GCTGGTGAAAGTAAAAGATGCTGAAGATCAGTTGGGTGCACGAGTGGGTACAT
 CGAACTGGATCTCAACAGCGGTAAGA
 TCCTTGAGAGTTTTCGCCCCGAAGAACGTTTTCCAATGATGAGCACTTTTAAAGT
 TCTGCTATGTGGCGCGGTATTATCC
 CGTATTGACGCCGGGCAAGAGCAACTCGGTGCGCCGCATACACTATTCTCAGAATG
 ACTTGGTTGAGTACTCACCAAGTCAC
 AGAAAAGCATCTTACGGATGGCATGACAGTAAGAGAATTATGCAGTGCTGCCATA
 ACCATGAGTGATAACACTGCGGCCA
 ACTTACTTCTGACAACGATCGGAGGACCGAAGGAGCTAACCGCTTTTTTGACAA
 CATGGGGGATCATGTAACCTCGCCTT
 GATCGTTGGGAACCGGAGCTGAATGAAGCCATACCAAACGACGAGCGTGACACC
 ACGATGCCTGTAGCAATGGCAAACAAC
 GTTGCGCAAACTATTAAGTGGCGAACTACTTACTCTAGCTTCCCGGCAACAATTA
 ATAGACTGGATGGAGGCGGATAAAG
 TTGCAGGACCCTTCTGCGCTCGGCCCTTCCGGCTGGCTGGTTTATTGCTGATAA
 ATCTGGAGCCGGTGAGCGTGGGTCT
 CGCGGTATCATTGCAGCACTGGGGCCAGATGGTAAGCCCTCCCGTATCGTAGTTA
 TCTACACGACGGGGAGTCAGGCAAC
 TATGGATGAACGAAATAGACAGATCGCTGAGATAGGTGCCTCACTGATTAAGCAT
 TGGTAACTGTCAGACCAAGTTTACT
 CATATATACTTTAGATTGATTTAAACTTCATTTTTTAATTTAAAGGATCTAGGTG
 AAGATCCTTTTTGATAATCTCATG
 ACCAAAATCCCTTAACGTGAGTTTTCGTTCCACTGAGCGTCAGACCCCGTAGAAA
 AGATCAAAGGATCTTCTTGAGATCC
 TTTTTTTCTGCGCGTAATCTGCTGCTTGCAAACAAAAAAACCACCGCTACCAGCG
 GTGGTTTGTGTTGCCGGATCAAGAGC
 TACCAACTCTTTTTCCGAAGGTAACCTGGCTTCAGCAGAGCGCAGATACCAAATAC
 TGTCTTCTAGTGTAGCCGTAGTTA
 GGCCACCACTTCAAGAACTCTGTAGCACCGCCTACATACCTCGCTCTGCTAATCC
 TGTTACCAGTGGCTGCTGCCAGTGG
 CGATAAGTCGTGTCTTACCGGGTTGGACTCAAGACGATAGTTACCGGATAAGGCG
 CAGCGGTGCGGGCTGAACGGGGGGTT
 CGTGACACAGCCCAGCTTGGAGCGAACGACCTACACCGAACTGAGATACCTAC
 AGCGTGAGCTATGAGAAAGCGCCACGCTTCCCGAAGGGAGAAAGGCGGACAGGT
 ATCCGGTAAGCGGCAGGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGG
 GGGAAACGCCTGGTATCTTTATAGTCTGTGCGGGTTTCGCCACCTCTGACTTGAG
 CGTCGATTTTTGTGATGCTCGTCAG
 GGGGGCGGAGCCTATGGAAAAACGCCAGCAACGCGGCCTTTTTACGGTTCCCTGG
 CCTTTTGCTGGCCTTTTGCTCACATGGCTCGAC3'

Figure 7C

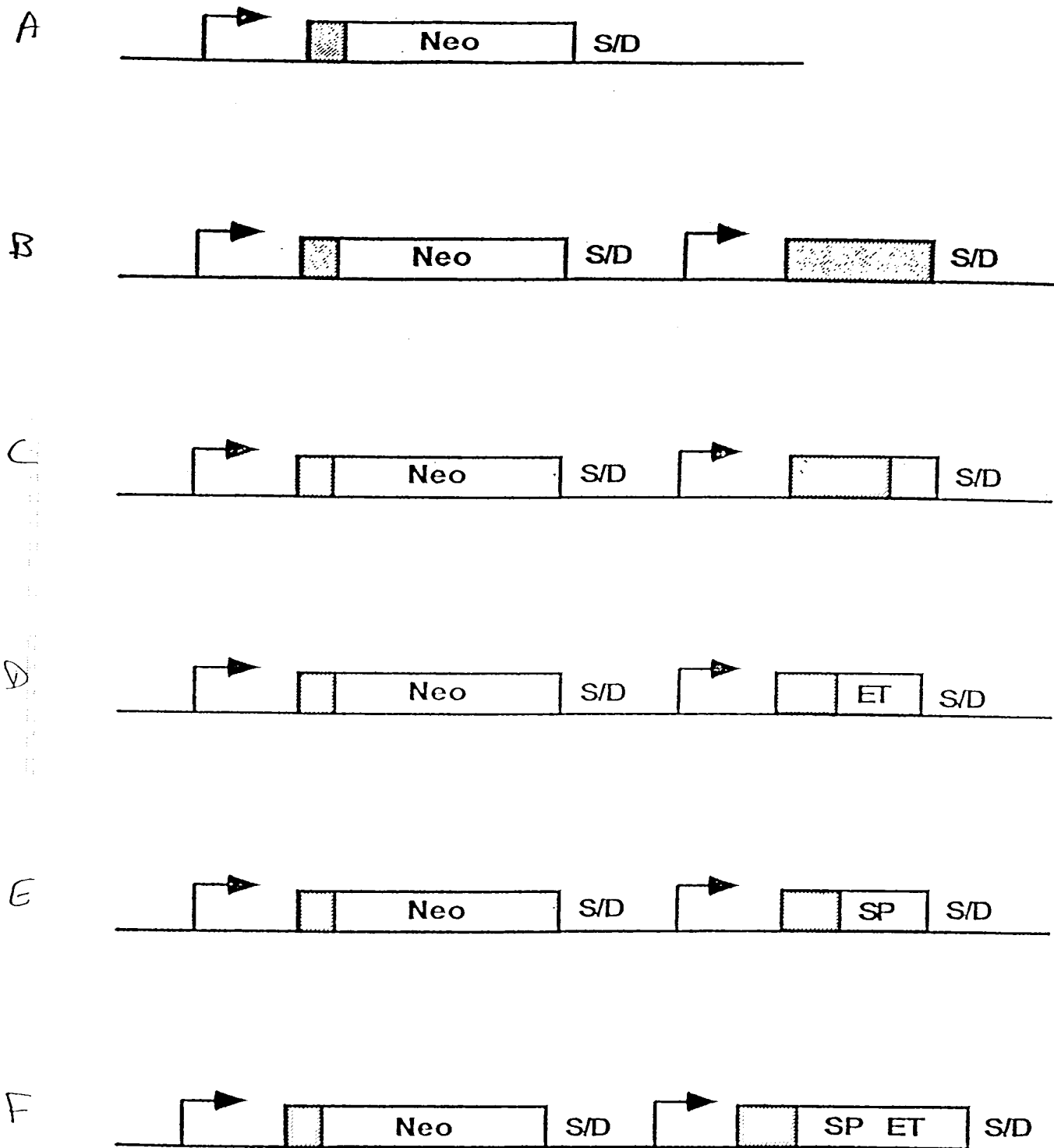


FIGURE 8

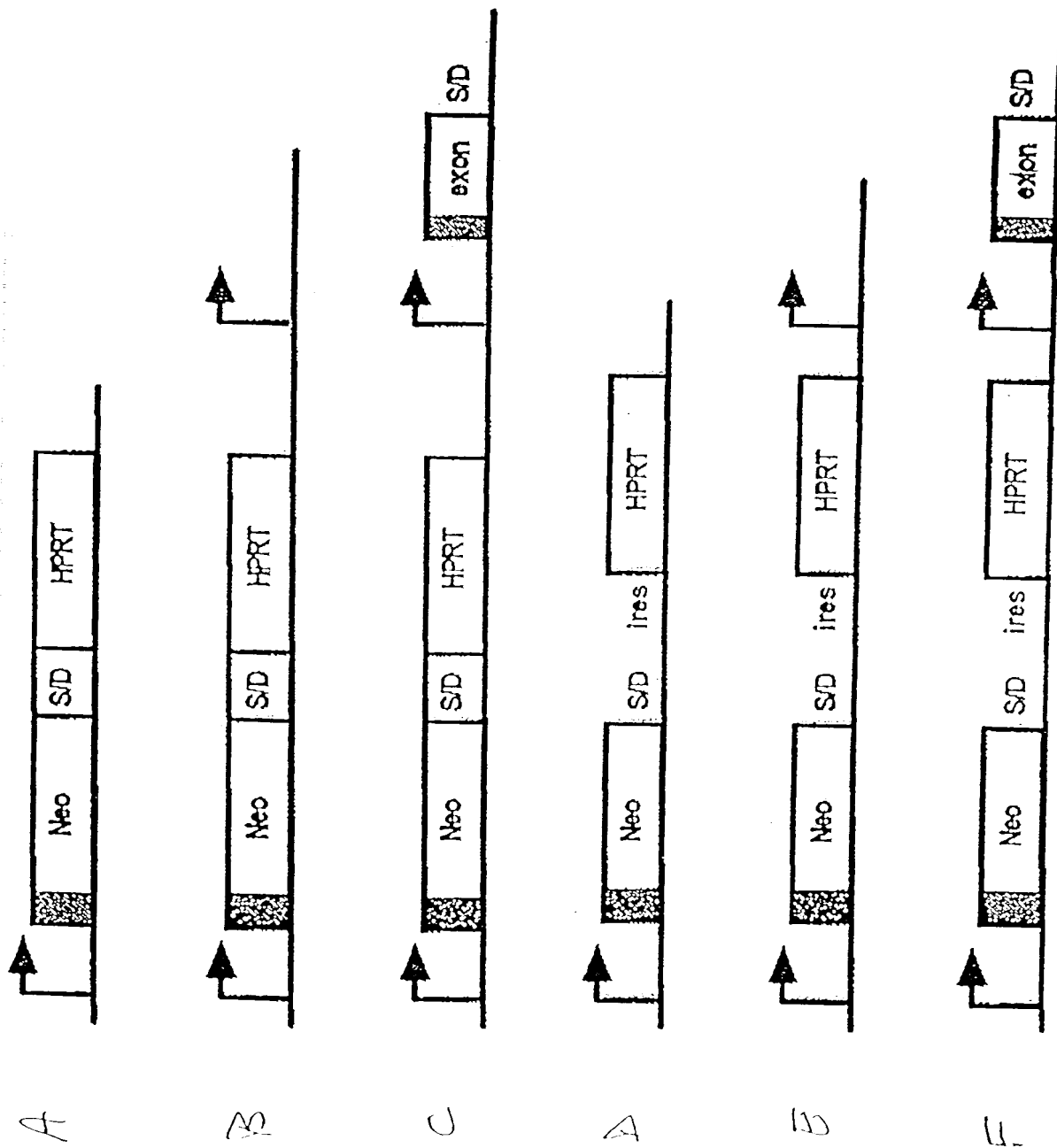


FIGURE 9

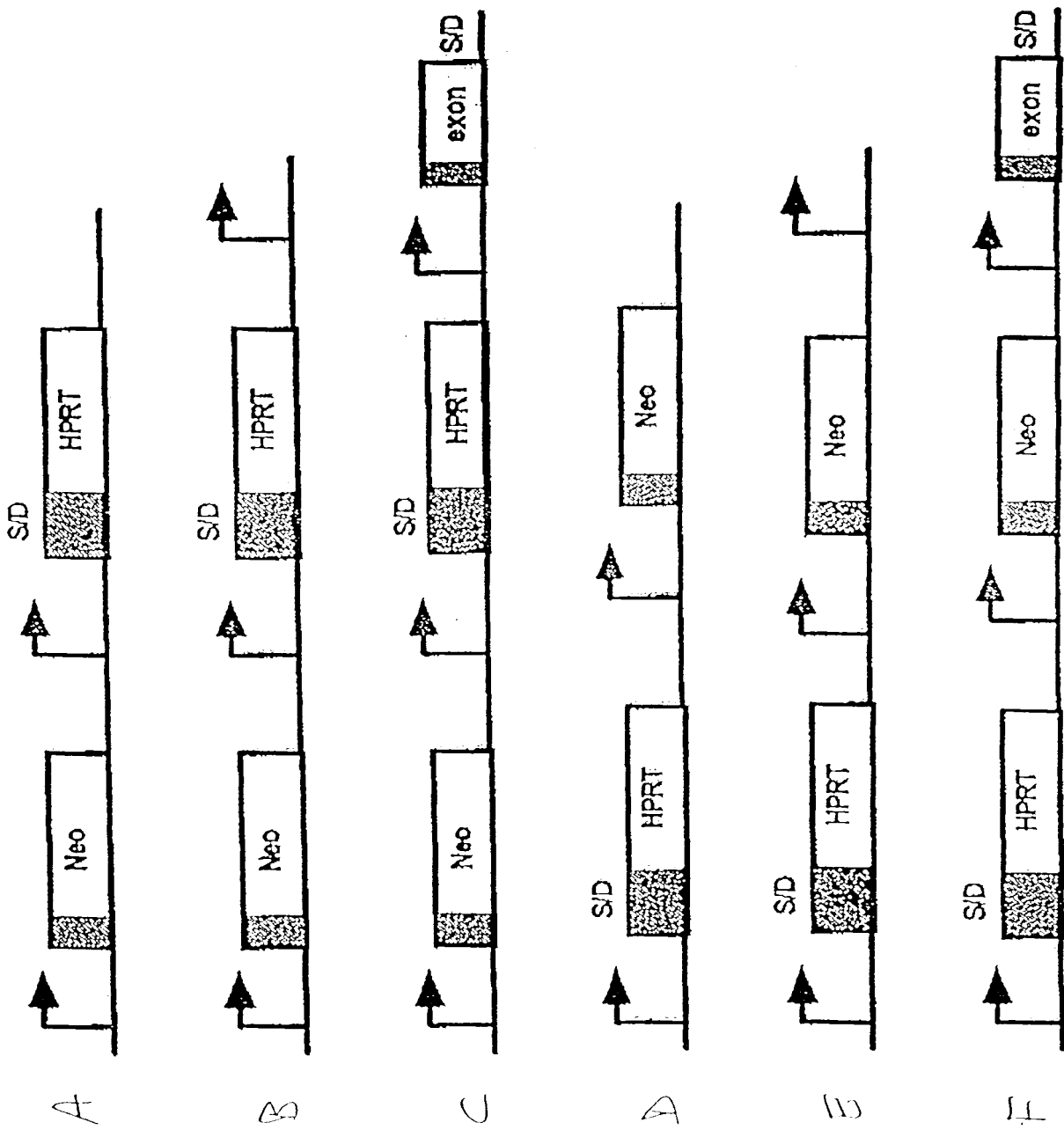
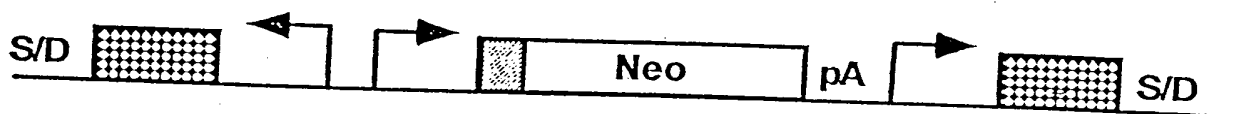


FIGURE 10

A



B



C

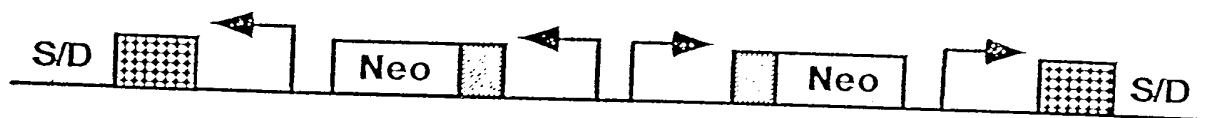


FIGURE 11

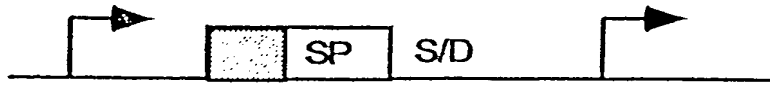
A



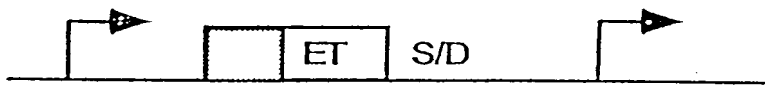
B



C



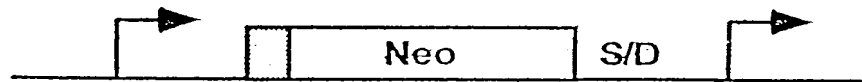
D



E



F



G

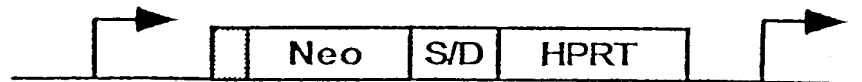


FIGURE 12

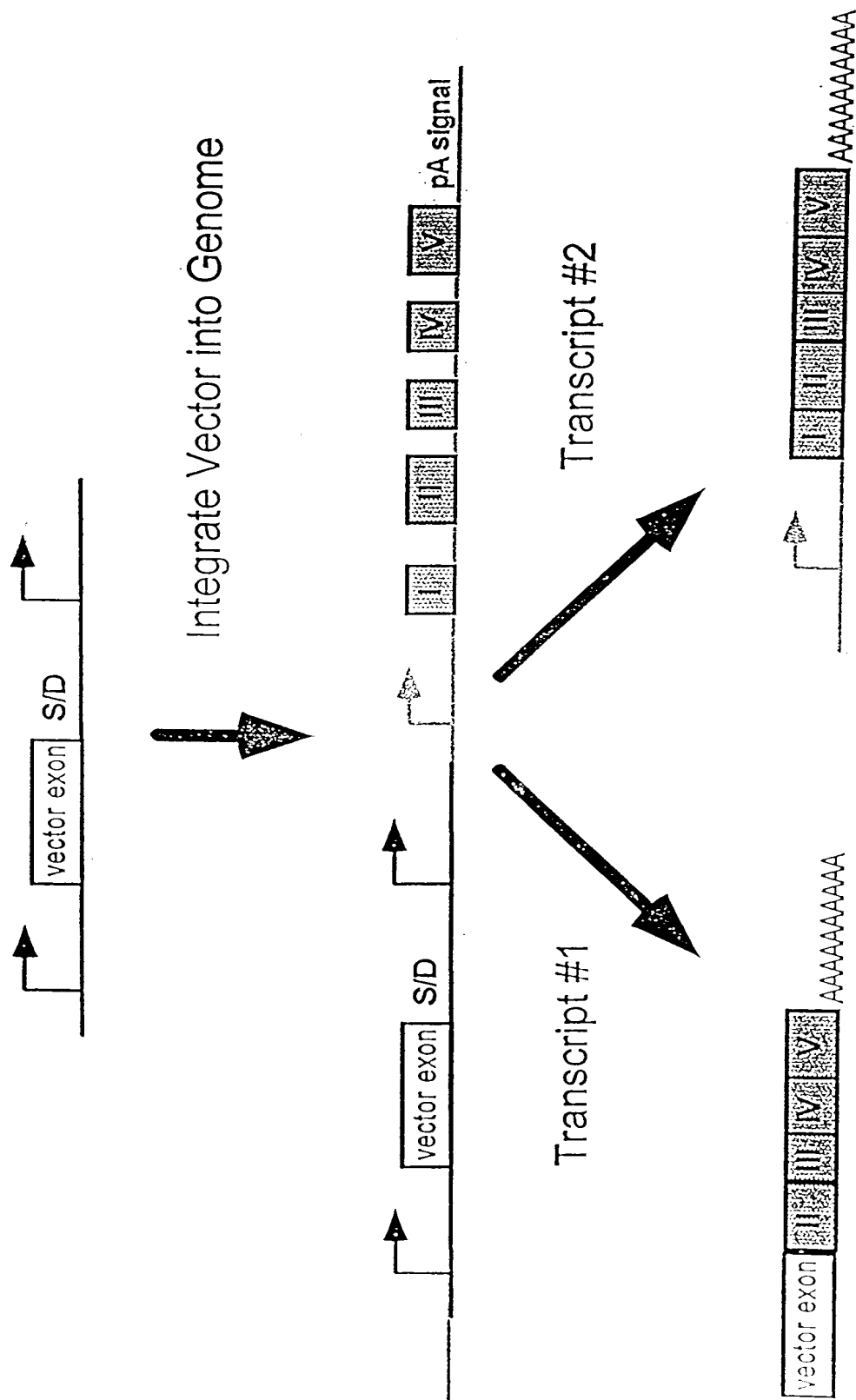


FIGURE 13

AGATCTTCAATATTGGCCATTAGCCATATTATTTCATTGGTTATATAGCATAAATCAATATTGG
CTATTGGCCATTGCATACGTTGTATCTATATCATAATATGTACATTTATATTGGCTCATGTCCA
ATATGACCGCCATGTTGGCATTGATTATTGACTAGTTATTAATAGTAATCAATTACGGGGTCA
TTAGTTCATAGCCCATATATGGAGTTCGCGGTTACATAACTTACGGTAAATGGCCCCGCTGGC
TGACCGCCCAACGACCCCCGCCATTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCA
ATAGGGACTTTCCATTGACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCCACTTGGCAGTA
CATCAAGTGTATCATATGCCAAGTCCGCCCCCTATTGACGTCAATGACGGTAAATGGCCCCGCC
TGGCATTATGCCCAGTACATGACCTTACGGGACTTTCCTACTTGGCAGTACATCTACGTATTA
GTCATCGCTATTACCATGGTGATGCGGTTTTTGGCAGTACACCAATGGGCGTGGATAGCGGTTT
GACTCACGGGGATTTCCTAAGTCTCCACCCCCATTGACGTCAATGGGAGTTTGTGTTTGGCACCAA
AATCAACGGGACTTTCCAAAATGTCGTAACAACTGCGATCGCCCCGCCCGTTGACGCGAAATG
GGCGGTAGGCGTGTACGGTGGGAGGTCTATATAAGCAGAGCTCGTTTGTAGTGAACCGTCAGAT
CACTAGAAGCTTTATTGCGGTAGTTTATCACAGTTAAATTGCTAACGCAGTCAGTGCTTCTGA
CACAACAGTCTCGAACTTAAGCTGCAGTGAATCTCTTA AatccacatggctacaggtgagtaactgGATCTA
GCGCTATATGCGTTGATGCAATTTCTATGCGCACCCGTTCTCGGAGCACTGTCCGACCGCTTT
GGCCGCCGCCAGTCCGTGCTCGCTTCGCTACTTGGAGCCACTATCGACTACGCGATCATGGCG
ACCACACCCGTCCTGTGGATCCTCTACGCCGGACGCATCGTGGCCGGCATCACCGGCGCCACA
GGTGGCGTTGCTGGCGCCTATATCGCCGACATCACCGATGGGGAAGATCGGGGCTCGGCACTTC
GGGCTCATGAGCGCTTGTTTCGGCTCTCTTAAGGTAGCAGATCCTTGCTAGAGTGCACCAATT
CTCATGTTTGACAGCTTATCATCGCAGATCCTGAGCTTGTATGGTGCACTCTCAGTACAATCT
GCTCTGCTGCCGCATAGTTAAGCCAGTATCTGCTCCCTGCTTGTGTGTTGGAGGTGCGCTGAGT
AGTGCGCGAGCAAAATTTAAGCTACAACAAGGCAAGGCTTGACCGACAATTGCATGAAGAAT
CTGCTTAGGGTTAGGCGTTTTGCGCTGCTTCGCGATGTACGGGCCAGATATACGCGTATCTGA
GGGACTAGGGTGTGTTTAGGCGCCAGCGGGGCTTCGTTGTACGCGGTTAGGAGTCCCCTC
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AGTCTTGCAACATGGTAACGATGAGTTAGCAACATGCCTTACAAGGAGAGAAAAAGCACCGT
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tgagaagaatgattaatCGATCTTAAGTTTAATCTTTCCCGGGGTACCGTCGACTGCGGCCGCGGAATTC
CAAGCTTGAGTATTCTATCGTGTACCTAAATAACTTGGCGTAATCATGGTCATATCTGTTTCC
TGTGTGAAATTGTTATCCGCTCACAATTCACACACAACATACGAGCCGGAAGCATAAAGTGTA
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TGTGAGGGTTAATGCTTCGAGAAGACATGATAAGATACATTGATGAGTTTGGACAAACCACA
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CAGGGGGAGATGTGGGAGGTTTTTTAAAGCAAGTAAACCTCTACAAATGTGGTAAATCCG
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CGGCGGGTGTGGTGGTTACGCGCACGTGACCGCTACACTTGCCAGCGCCCTAGCGCCCGCTCC
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GGTGATGGTTACGTAAGTGGGCCATCGCCCTGATAGACGGTTTTTCGCCCTTTGACGTTGGAG
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AACAAAAATTTAACGCGAATTTTAAACAAAATATTAACGCTTACAATTTGCGCTGTGTACCTTC
TGAGGCGGAAAGAACCAGCTGTGGAATGTGTGTGAGTTAGGGTGTGGAAAGTCCCCAGGCTC
CCCAGCAGGCAGAAGTATGCAAAGCATGCATCTCAATTAGTCAGCAACCAGGTGTGGAAAGT
CCCCAGGCTCCCCAGCAGGCAGAAGTATGCAAAGCATGCATCTCAATTAGTCAGCAACCATA-

FIGURE 14A

GTCCCGCCCCCTAACTCCGCCCCATCCCGCCCCCTAACTCCGCCCCAGTTCCGCCCCATTCTCCGCCCC
ATGGCTGACTAATTTTTTTTTTATTTATGCAGAGGCCGAGGCCGCTCGGCTCTGAGCTATTCC
AGAAGTAGTGAGGAGGCTTTTTTGGAGGCCCTAGGCTTTTGCAAAAAGCTTGATTCTTCTGACA
CAACAGTCTCGAACTTAAGGCTAGAGCCACCATGATTGAACAAGATGGATTGCACGCAGGTT
CTCCGGCCGCTTGGGTGGAGAGGCTATTCGGCTATGACTGGGCACAAACAGACAATCGGCTGC
TCTGATGCCGCCGTTCCGGCTGTCAGCGCAGGGGCGCCCGGTTCTTTTTGTCAAGACCGAC
CTGTCCGGTGCCCTGAATGAACTGCAGGACGAGGCAGCGCGGCTATCGTGGCTGGCCACGAC
GGGCGTTCCCTTGCGCAGCTGTGCTCGACGTTGTCACTGAAGCGGGAAGGGACTGGCTGCTATT
GGGCGAAGTGCCGGGGCAGGATCTCCTGTCTCATCTCACCTTGCTCCTGCCGAGAAAGTATCCAT
CATGGCTGATGCAATGCGGCGGCTGCATACGCTTGATCCGGCTACCTGCCCATTCGACCAACCA
AGCGAAACATCGCATCGAGCGAGCACGTATCGGATGGAAGCCGGTCTTGTCGATCAGGATG
ATCTGGACGAAGAGCATCAGGGGCTCGCGCCAGCCGAACTGTTCCGCCAGGCTCAAGGCGCGC
ATGCCCCGACGGCGAGGATCTCGTCTGACCCATGGCGATGCTGCTTGCCGAATATCATGGTG
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CACGATGGCCGCAATAAAATATCTTTATTTTCAATTACATCTGTGTGTTGGTTTTTGTGGAAG
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CAACCGCCAAACACCCGCTGACGCGCCCTGACGGGCTTGTCTGCTCCCGGCATCCGCTTACAGA
CAAGCTGTGACCGTCTCCGGGAGCTGCATGTGTGTCAGAGGTTTTACCGTCATCACCGAAACGC
GCGAGACGAAAGGGCCTCGTGATACGCTATTTTTATAGGTTAATGTATGATAATAATGGTT
TCTTAGACGTCAGGTGGCACTTTTTCGGGGAAATGTGCGCGGAACCCCTATTTGTTTATTTTTCT
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GAAAAAGGAAGAGTATGAGTATTCAACATTTCCGTGTGCGCCTTATCCCTTTTTTGGCGCAT
TTTGCCTTCTGTTTTTGTCTACCCAGAAACGCTGTGAAAGTAAAGATGCTGAAGATCAGT
TGGGTGCACGAGTGGGTTACATCGAACTGGATCTCAACAGCGGTAAGATCCTTGAGAGTTTTTC
GCCCCGAAGAACGTTTTCCAATGATGAGCACTTTTAAAGTTCTGCTATGTGGCGCGGTATTAT
CCCCTATTGACGCGGGCAAGAGCAACTCGGTGCGCCGATACACTATTCTCAGAATGACTTGG
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AGTGCTGCCATAACCATGAGTGATAACACTGCGGCCAACTTACTTCTGACAACGATCGGAGG
ACCGAAGGAGCTAACCGCTTTTTTGCACAACATGGGGGATCATGTAACCTCGCCTGATCGTTG
GGAACCGGAGCTGAATGAAGCCATACCAAACGACGAGCGTGACACCACGATGCCTGTAGCAA
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GGACTCAAGACGATAGTTACCGGATAAGGCGCAGCGGTGCGGCTGAACGGGGGTTCTGTGCA
CACAGCCCAGCTTGGAGCGAACGACCTACACCGAACTGAGATACCTACAGCGTGAGCTATGA
GAAAGCGCCACGCTTCCCGAAGGGAGAAAGGCGGACAGGTATCCGGTAAGCGGCAGGGTCG
GAACAGGAGAGCGCACGAGGGAGCTTCCAGGGGAAACGCCTGGTATCTTTATAGTCTGTG
GGGTTTCCGCACCTCTGACTTGAGCGTCGATTTTTGTGATGCTCGTCAGGGGGCGGAGCCTA
TGGA AAAACGCCAGCAACGCGGCCCTTTTACGGTTCTTGGCCTTTTGCTGGCCTTTTGCTCAC
ATGGCTCGAC

FIGURE 14B

GATCTTCAATATTGGCCATTAGCCATATTATTTCATTGGTTATATAGCATAAATCAATATTGGCT
ATTGGCCATTGCATACGTTGTATCTATATCATAATATGTACATTTATATTGGCTCATGTCCAAT
ATGACCGCCATGTTGGCATTGATTATTGACTAGTTATTAATAGTAATCAATTACGGGGTCATT
AGTTCATAGCCCATATATGGAGTTCGCGTTACATAACTTACGGTAAATGGCCCGCTGGCTG
ACCGCCCAACGACCCCGCCATTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAAT
AGGGACTTTCCATTGACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCCACTTGGCAGTACA
TCAAGTGTATCATATGCCAAGTCCGCCCTATTGACGTCAATGACGGTAAATGGCCCGCTG
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CTCCCCAGCAGGCAGAAAGTATGCAAAGCATGCATCTCAATTAGTCAGCAACCAGGTGTGGAA
AGTCCCCAGGCTCCCCAGGCAGAAAGTATGCAAAGCATGCATCTCAATTAGTCAGCAACC
ATAGTCCCGCCCCCTAACTCCGCCCCCTAACTCCGCCCCAGTTCCGCCCCATTCTCCG
CCCCATGGCTGACTAATTTTTTTTATGTCAGAGGCCGAGGCCGCTCGGCCTCTGAGCTA
TTCCAGAAGTAGTGAGGAGGCTTTTTTGGAGGCCCTAGGCTTTTTGCAAAAAGCTTGATTCTTCT
GACACAACAGTCTCGAACTTAAGGCTAGAGCCACCATTGATGAACAAGATGGATTGCACGCA
GGTCTCTCCGGCCGCTTGGGTGGAGAGGCTATTCGGCTATGACTGGGCACAACAGACAATCGG
CTGCTCTGATGCCGCCGTGTTCCGGCTGTCAGCGCAGGGGCGCCCGGTTCTTTTTGTCAAGAC
CGACCTGTCCGGTGCCCTGAATGAAGTGCAGGACGAGGCAGCGCGGCTATCGTGGCTGGCCA
CGACGGGCGTTCTTGCGCAGCTGTGCTCGACGTTGTCACTGAAGCGGGAAGGGACTGGCTG-

FIGURE 15A

CTATTGGGCGAAGTGCCGGGGCAGGATCTCCTGTCATCTCACCTTGCTCCTGCCGAGAAAAGTA
TCCATCATGGCTGATGCAATGCGGCGGCTGCATACGCTTGATCCGGCTACCTGCCCATTCGAC
CACCAAGCGAAAACATCGCATCGAGCGAGCACGTACTCGGATGGAAGCCGGTCTTGTCGATCA
GGATGATCTGGACGAAGAGCATCAGGGGCTCGCGCCAGCCGAACTGTTCCGCCAGGCTCAAGG
CGCGCATGCCCCGACGGCGAGGATCTCGTCGTGACCCATGGCGATGCCTGCTTGCCGAATATCA
TGGTGGAATAATGGCCGCTTTTCTGGATTTCATCGACTGTGGCCGGCTGGGTGTGGCGGACCGCT
ATCAGGACATAGCGTTGGCTACCCGTGATATTGCTGAAGAGCTTGGCGGCGAATGGGCTGAC
CGCTTCCTCGTGCTTTACGGIATCGCCGCTCCCGATTTCGCAGCGCATCGCCTTCTATCGCCTTC
TTGACGAGGccaTTTctgatggaggtagCGGCCGCTAACCTGGTTGCTGACTAATTGAGATGCATGCTTT
GCATACTTCTGCCTGCTGGGGAGCCTGGGGACTTTCCACACCCTAACTGACACACATTCCACA
GCTGGTTCTTTCCGCCTCAGAAGGTACACAGGCGAAAATTGTAAGCGTTAATATTTTGTAAAA
TTCGCGTTAAATTTTGTAAATCAGCTCATTTTTTTAACCAATAGGCCGAAATCGGCAAAATC
CCTTATAAATCAAAAGAATAGACCGAGATAGGGTTGAGTGTGTTCAGTTTGGAACAAGAG
TCCACTATTAAAGAACGTGGACTCCAACGTCAAAGGGCGAAAAACCGTCTATCAGGGCGATG
GCCCCAC

FIGURE 15B

GATCTTCAATATTGGCCATTAGCCATATTATTTCATTGGTTATATAGCATAAATCAATATTGGCT
ATTGGCCATTGCATACGTTGTATCTATATCATAATATGTACATTTATATTGGCTCATGTCCAAT
ATGACCGCCATGTTGGCATTGATTATTGACTAGTTATTAATAGTAATCAATTACGGGGTCATT
AGTTTCATAGCCCATATATGGAGTTCCGCGTTACATAACTTACGGTAAATGGCCCCGCTGGCTG
ACCGCCCAACGACCCCCGCCATTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAAT
AGGGACTTTCCATTGACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCCACTTGGCAGTACA
TCAAGTGTATCATATGCCAAGTCCGCCCCCTATTGACGTCAATGACGGTAAATGGCCCCGCTG
GCATTATGCCCAGTACATGACCTTACGGGACTTTCTACTTGGCAGTACATCTACGTATTAGT
CATCGCTATTACCATGGTGATGCGGTTTTTGGCAGTACACCAATGGGCGTGGATAGCGGTTGA
CTCACGGGGATTTCOAAGTCTCCACCCCATTGACGTCAATGGGAGTTTGTTTTGGCACCAAAA
TCAACGGGACTTTCCAAAATGTCTGAACAACTGCGATCGCCCCGCCCGTTGACGCAATGGG
CGGTAGGCGTGTACGGTGGGAGGTCTATATAAGCAGAGCTTggttagtgaacgtCAGATCACTAGAA
GCTTTATTGCGGTAGTTTATCACAGTTAAATTGCTAACGCAAGTCAGTGCTTCTGACACAACAG
TCTCGAACTTAAGCTGCAGTGAATCTCTTAAtocaccatggctacagGTGAGTACTCGCTACCTTAAG
AGAGGCCTATCTGGCCAGTTAGCAGTCGAAGAAAGAAAGTTAAGAGAGCCGAAACAAGCGCT
CATGAGCCCCGAAGTGGCGAGCCCCGATCTTCCCCATCGGTGATGTGCGCGATATAGGCGCCAG
CAACCGCACCTGTGGCGCCGGTGTATGCCGGCCACGATGCGTCCGGCGTAGAGGATCCACAGG
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TGGGCGGCGGCCAAAGCGGTCCGACAGTGTCTCCGAGAACGGGTGCGCATAGAAATTGCATCA
ACGCATATAGCGCTAGATCCTTGCTAGAGTCGAGATCTGTGAGCCATGTGAGCAAAAGGCC
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GAAAGTCCCCAGGCTCCCCAGCAGGCAGAAAGTATGCAAAGCATGCATCTCAATTAGTCAGCA
ACCATAGTCCCGCCCCTAACTCCGCCCATCCCGCCCCTAACTCCGCCCAGTTCCGCCCATTCT
CCGCCCCATGGCTGACTAATTTTTTTTATTTATGCAGAGGCCGAGGCCGCTCGGCCCTCTGAG
CTATTCCAGAAGTAGTAGGAGGCTTTTTTGGAGGCCTAGGCTTTTGA AAAAGCTTGATTCT
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CGGCTGCTCTGATGCCGCCGTGTTCCGGCTGTACGCGCAGGGGCGCCCGGTTCTTTTTGTCAA
GACCGACCTGTCCGGTGCCCTGAATGAACTGCAGGACGAGGACGCGGCTATCGTGGCTGG
CCACGACGGGCGTTCCCTTGCAGCAGCTGTGCTCGACGTTGTCACTGAAGCGGGAAGGGAAGTGG
CTGCTATTGGGCGAAGTGCCGGGGCAGGATCTCCTGTCTCTCACCTTGCTCCTGCCGAGAAA -

Figure 16A

GTATCCATCATGGCTGATGCAATGCGGCGGCTGCATACGCTTGATCCGGCTACCTGCCCATTC
GACCAACCAAGCGAAACATCGCATCGAGCGAGCACGTA CTCCGGATGGAAGCCGGTCTTGTCGA
TCAGGATGATCTGGACGAAGAGCATCAGGGGCTCGCGCCAGCCGA ACTGTTCCGCCAGGCTCA
AGGCGCGCATGCCCGACGGCGAGGATCTCGTCTGTGACCCATGGCGATGCTGCTTGCCGAAT
ATCATGGTGGAAAAATGGCCGCTTTTCTGGATT CATCGACTGTGGCCGGCTGGGTGTGGCGGAC
CGCTATCAGGACATAGCGTTGGCTACCCGTGATATTGCTGAAGAGCTTGGCGGCGAATGGGC
TGACCGCTTCCTCGTGCTTTACGGTATCGCCGCTCCCGATTTCGCAGCGCATCGCCTTCTATCGC
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TGCTGACTAATTGAGATGCATGCTTTGCATACTTCTGCCTGCTGGGGAGCCTGGGGACTTTCC
ACACCCTAACTGACACACATTCCACAGCTGGTTCITTTCCGCCTCAGAAGGTACACAGGCGAAAA
TTGTAAGCGTTAATATTTTGTAAAAATTTCGCGTTAAATTTTGTAAATCAGCTCATTTTTTAA
CCAATAGGCCGAAATCGGCCAAAATCCCTTATAAATCAAAAGAATAGACCGAGATAGGGTTGA
GTGTTGTTCCAGTTTGGAAACAAGAGTCCACTATTAAAGAACGTGGACTCCAACGTCAAAGG
CGAAAAACCGTCTATCAGGGCGATGGCCAC

FIGURE 16B

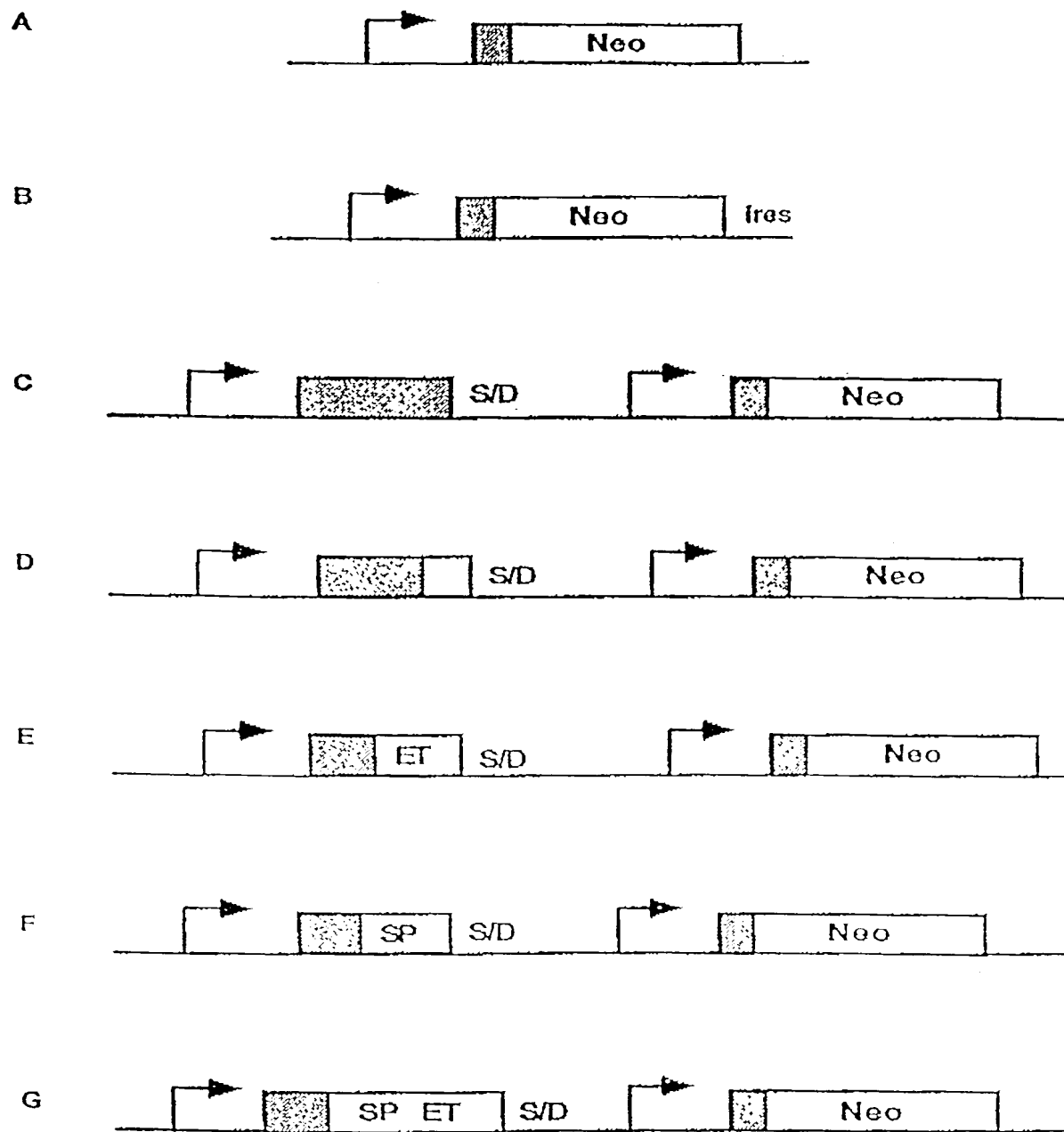


Figure 17

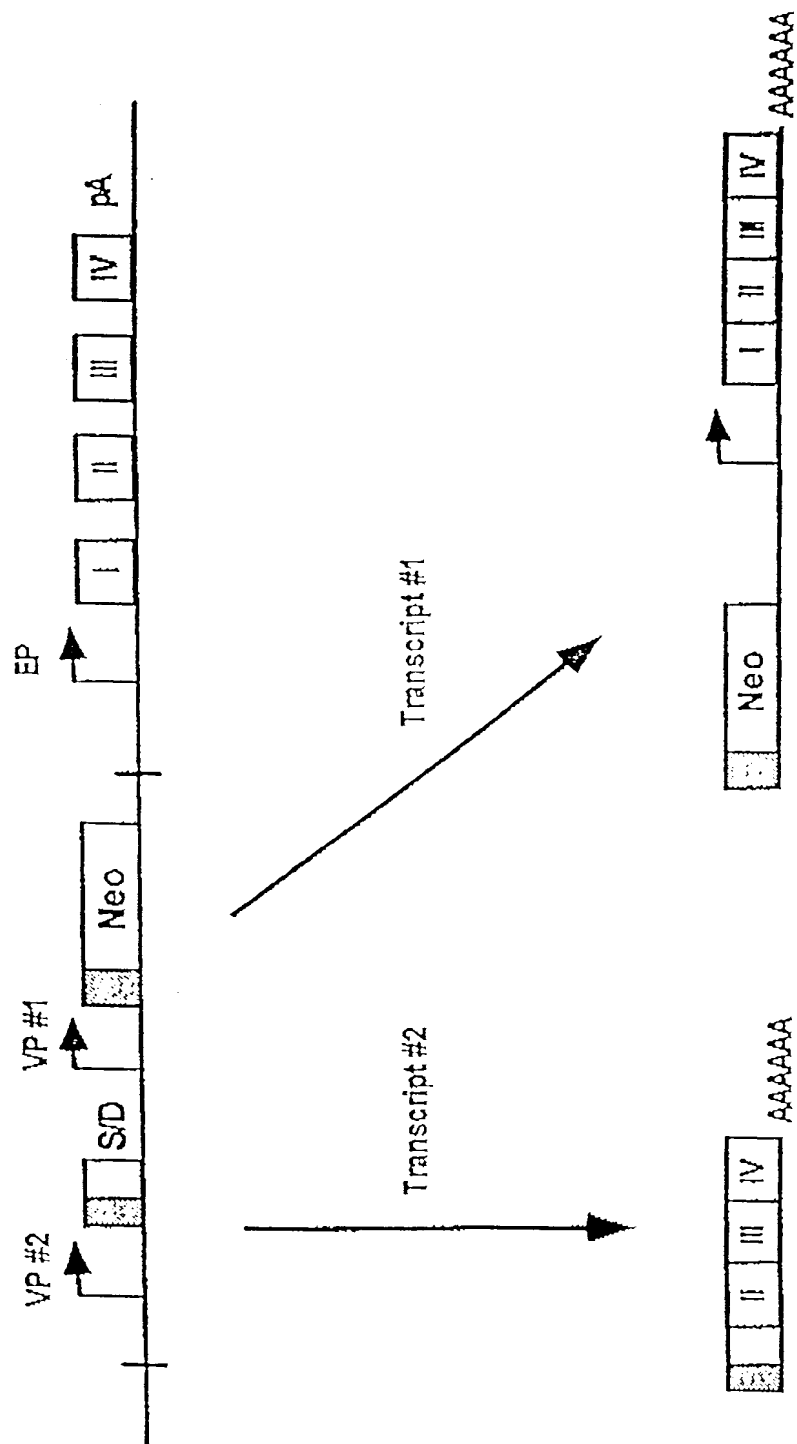


Figure 18



Figure 19

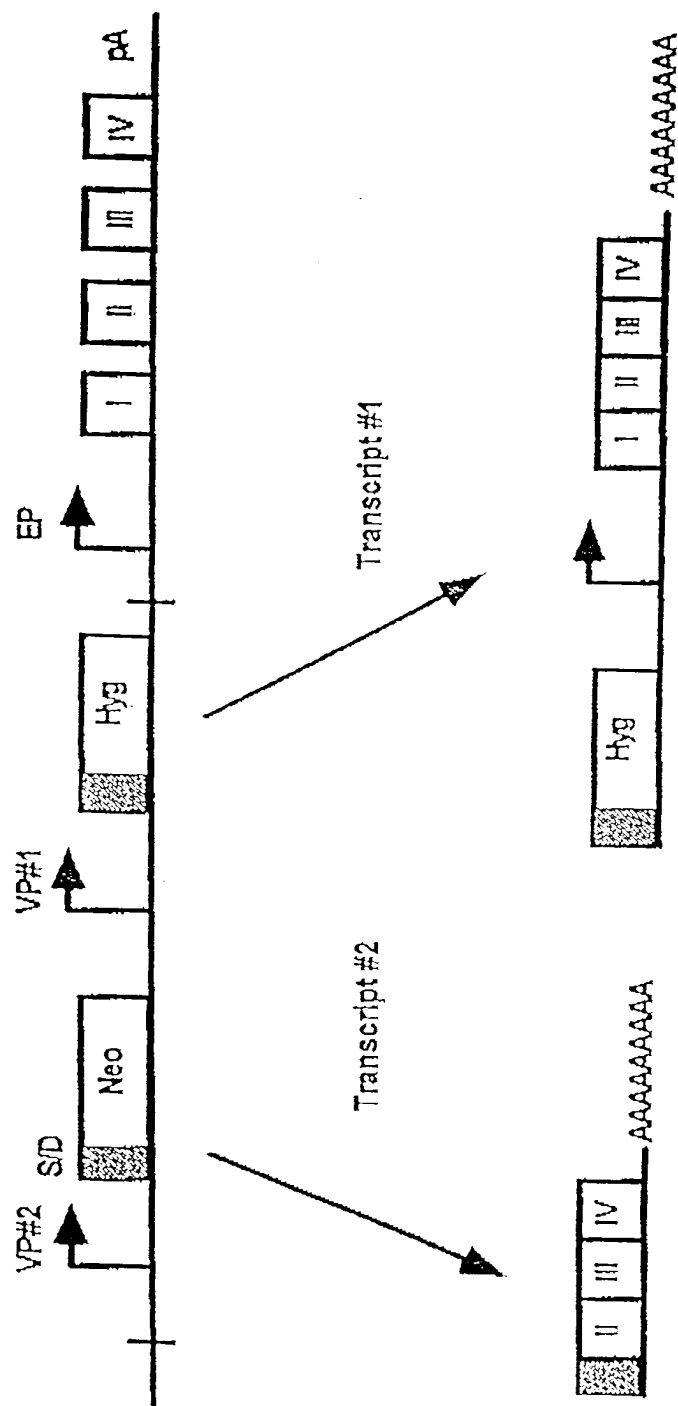


Figure 20A

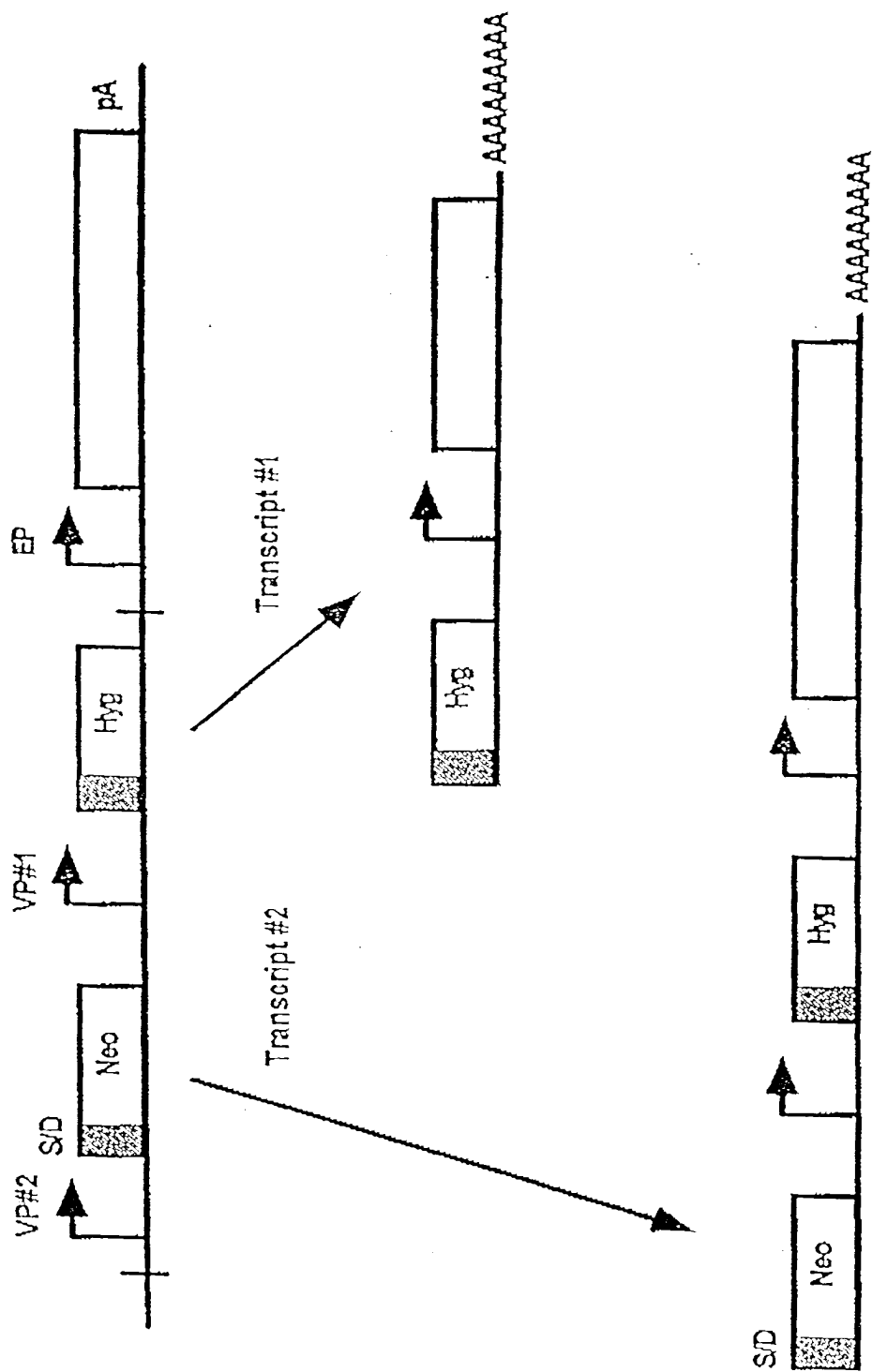


Figure 20B

A)

VP#2

S/D

HPRT

Neo

Neo

VP#1

B)

Figure 12

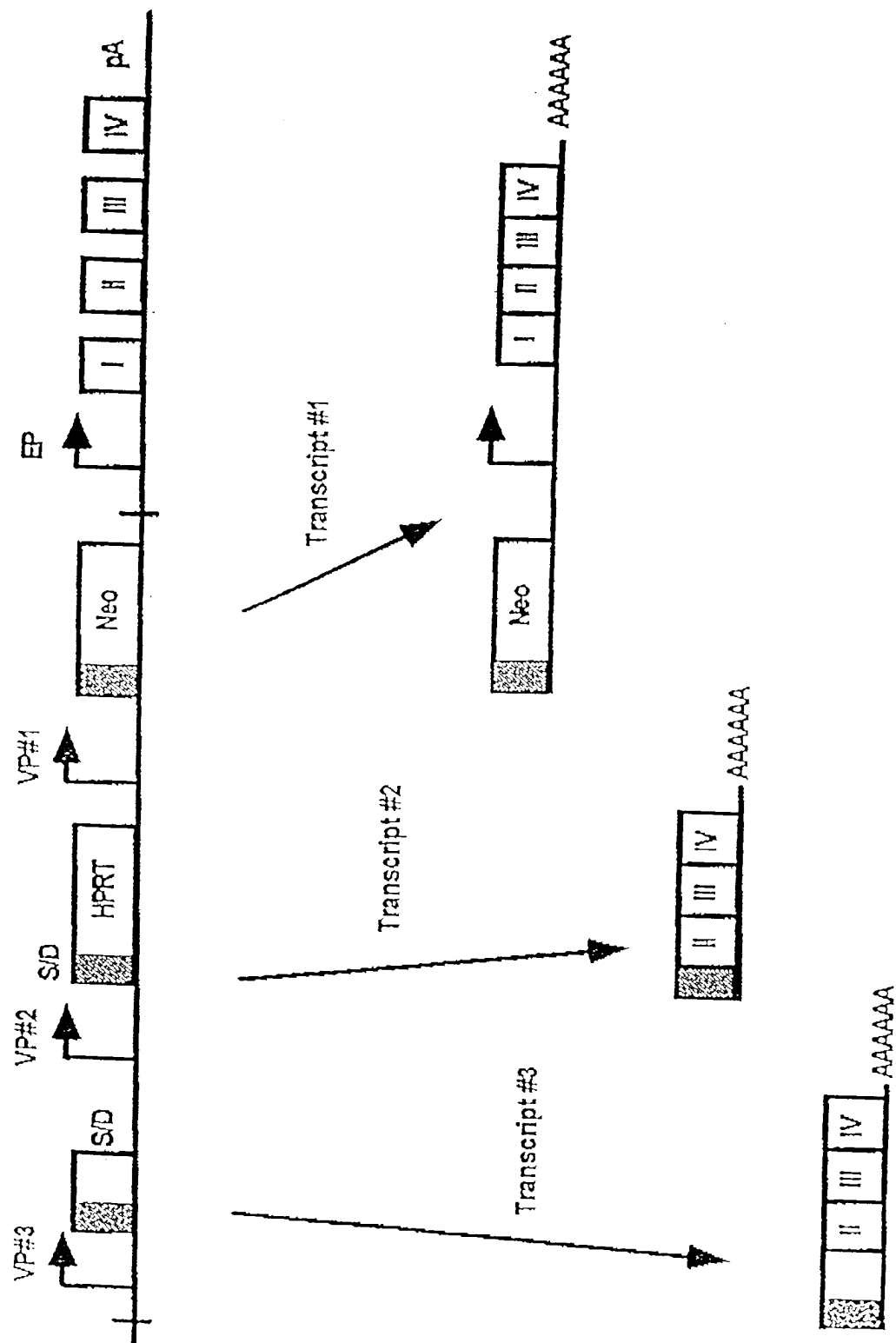
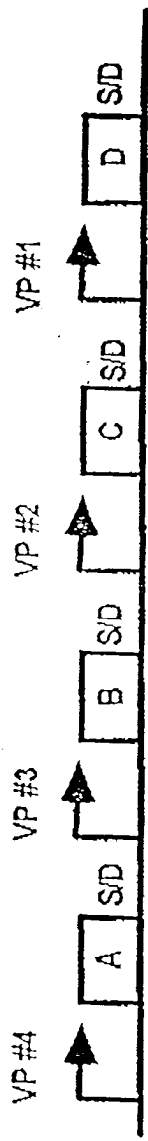


Figure 22



A) Exon A and Flanking Intron

5' UTR	ACCCAG	GTGATG	Vector Intron
--------	--------	--------	---------------

B) Exon B and Flanking Intron

5' UTR	ACCATGCCAG	GTGATG	Vector Intron
--------	------------	--------	---------------

C) Exon C and Flanking Intron

5' UTR	ACCATGCCAG	GTGATG	Vector Intron
--------	------------	--------	---------------

D) Exon D and Flanking Intron

5' UTR	ACCATGCCAG	GTGATG	Vector Intron
--------	------------	--------	---------------

Figure 23

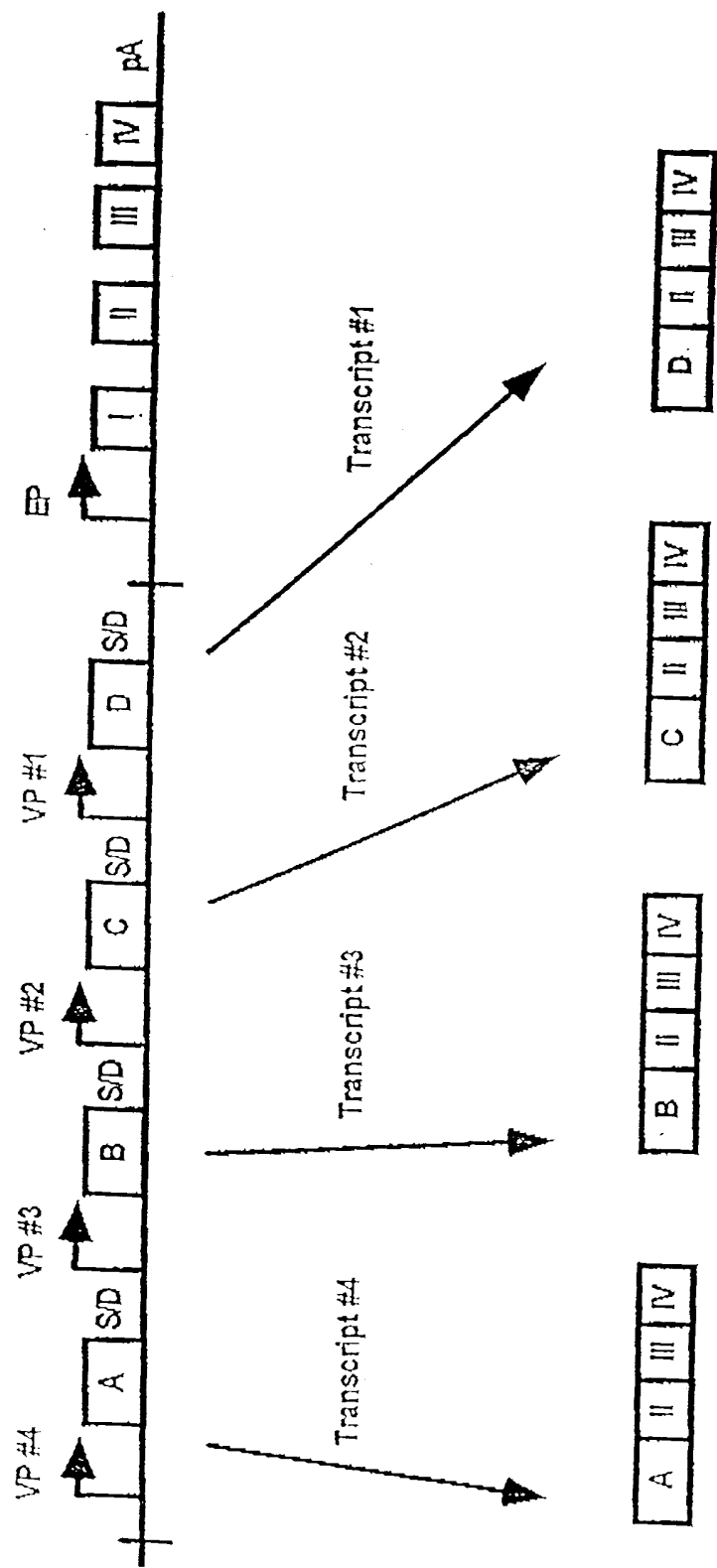


Figure 24

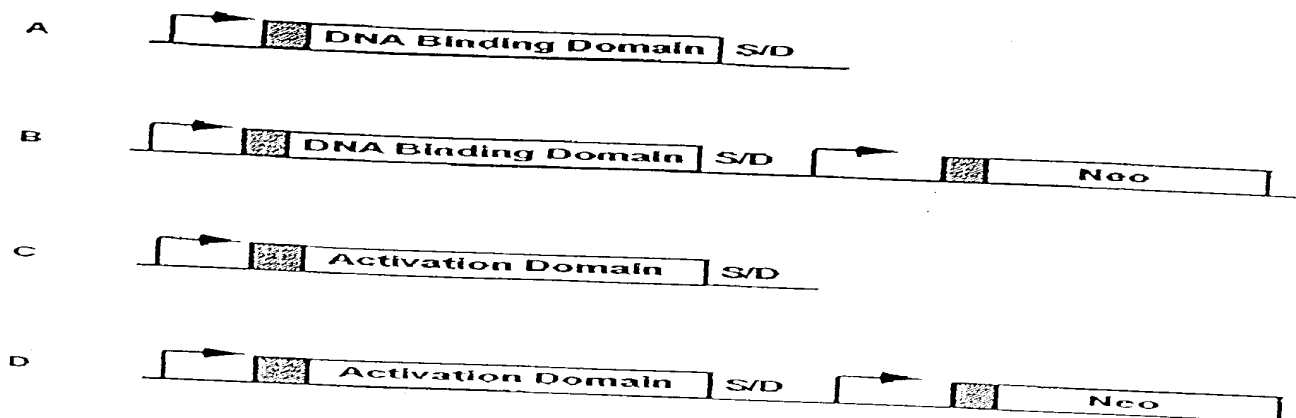


FIGURE 25

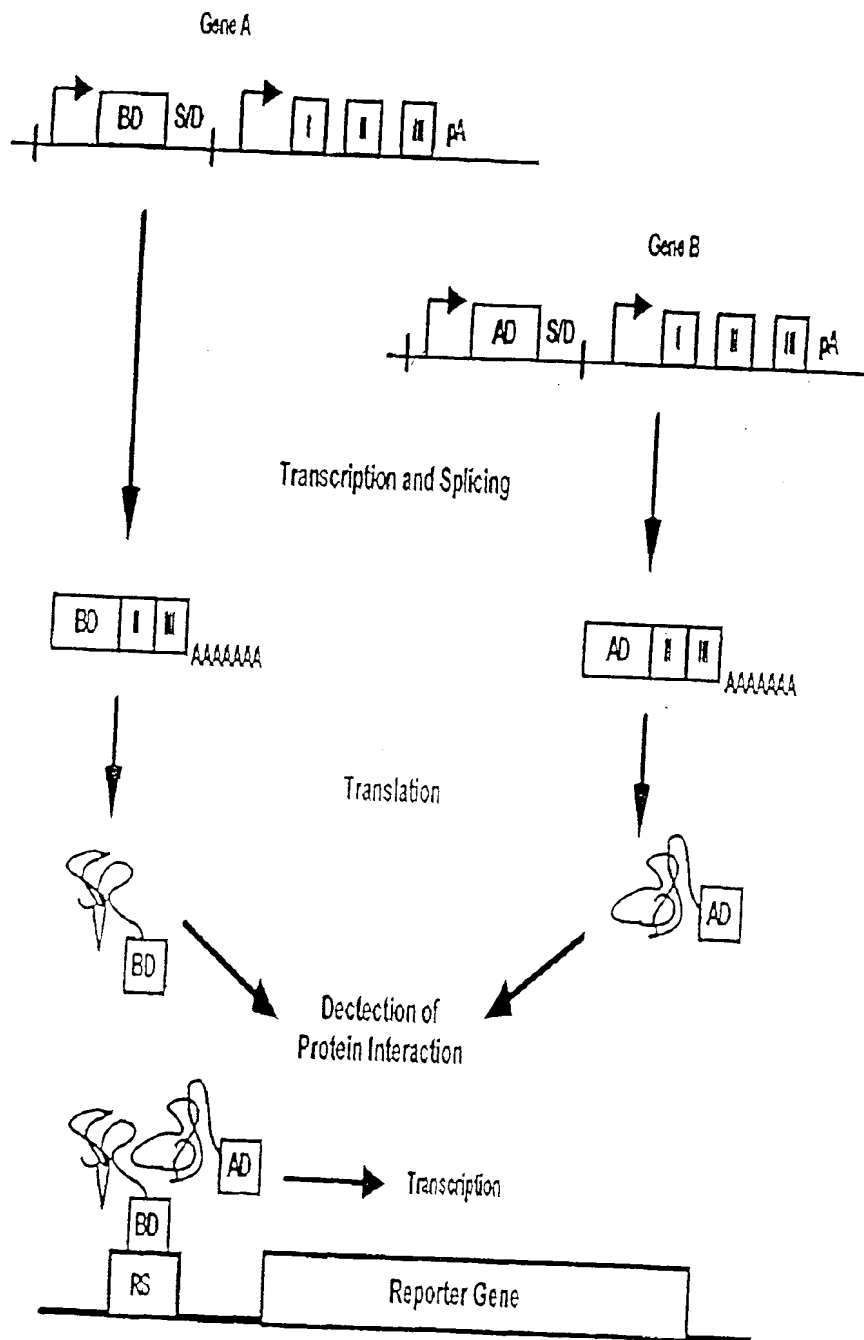


Figure 26

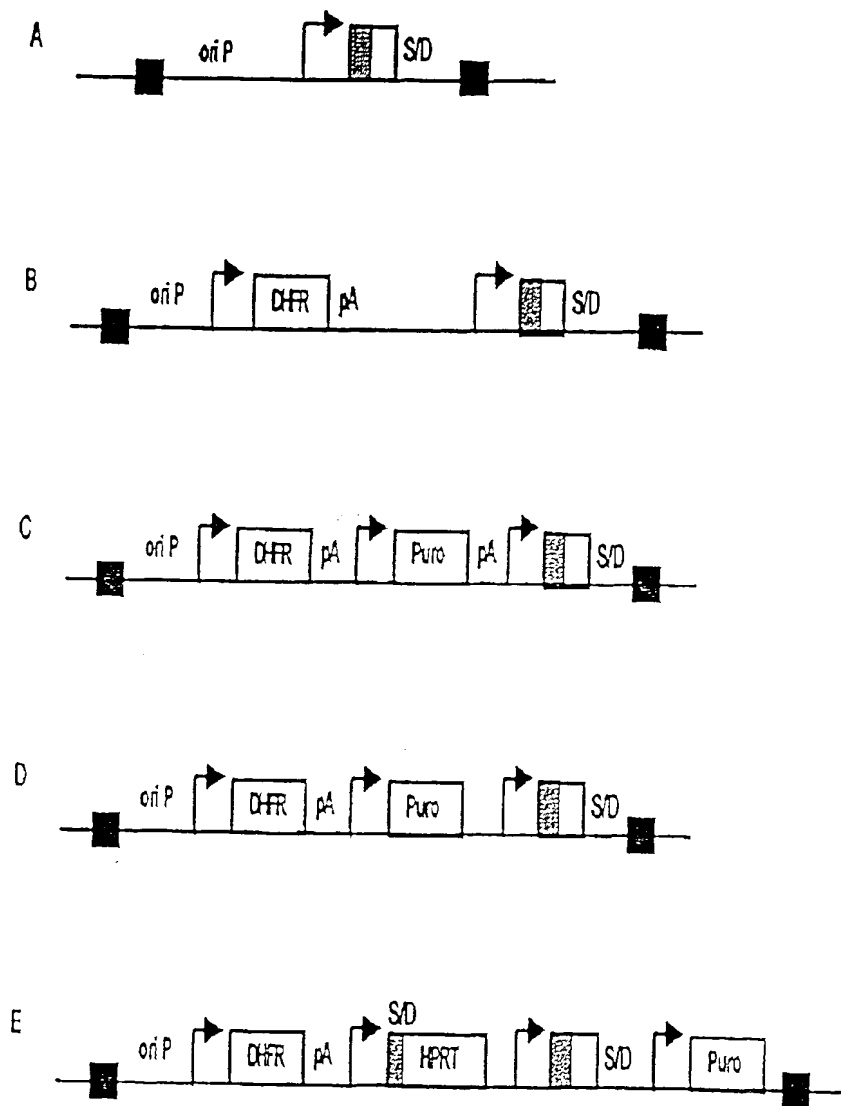


FIGURE 77

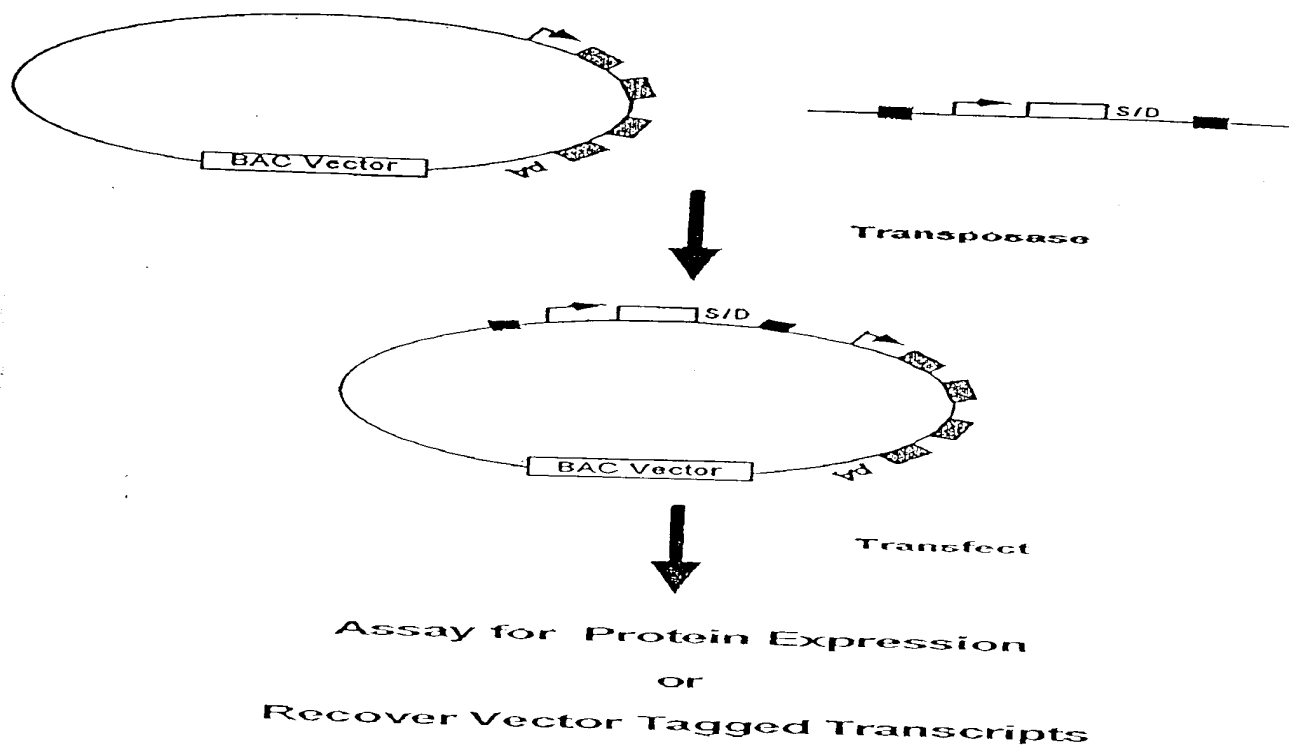


FIGURE 28

CACCTAAATTGTAAGCGTTAATATTTTGTAAATTCGCGTTAAATTTTGT
TAAATCAGCTCATTTTTTAACCAATAGGCCGAAATCGGCAAAATCCCTTAT
AAATCAAAAAGAAATAGACCGAGATAGGGTTGAGTGTTGTTCCAGTTTGGAA
CAAGAGTCCACTATTAAAGAACGTGGACTCCAACGTCAAAGGGCGAAAAA
CCGTCTATCAGGGCGATGGCCCACTACGTGAACCATCACCTAATCAAGTT
TTTTGGGGTTCGAGGTGCCGTAAAGCACTAAATCGGAACCCCTAAAGGGAGC
CCCCGATTTAGAGCTTGACGGGGAAAGCCGGCGAACGTGGCGAGAAAGGA
AGGGAAGAAAGCGAAAGGAGCGGGCGCTAGGGCGCTGGCAAGTGTAGCG
GTCACGCTGCGCGTAACCACCACACCCGCCGCGCTTAATGCGCCGCTACAG
GGCGCGTCCCATTTCGCCATTACGGCTGCGCAACTGTTGGGAAGGGCGATC
GGTGCGGGCCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGGATGTGCTG
CAAGGCGATTAAAGTTGGGTAAACGCCAGGGTTTTCCCAGTCACGACGTTGTA
AAACGACGGCCAGTGAATTGTAATACGACTCACTATAGGGCGAATTGGGT
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AGCTTTATTGCGGTAGTTTATCACAGTTAAATTGCTAACGCAGTCAGTGCT
TCTGACACAACAGTCTCGAACTTAAGCTGCAGTGAAGTCTCTTaatataaccaccgctac
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GAGAGCCGAAACAAGCGCTCATGAGCCCGAAGTGGCGAGCCCGATCTTCC
CCATCGGTGATGTGCGCGATATAGGCGCCAGCAACCGCACCTGTGGCGCC-

Figure 29A

GGTGATGCCGGCCACGATGCGTCCGGCGTAGAGGATCCACAGGACGGGTG
TGGTCGCCATGATCGCGTAGTCGATAGTGGCTCCAAGTAGCGAAGCGAGC
AGGACTGGGCGGCGGCCAAAGCGGTTCGGACAGTGCTCCGAGAACGGGTGC
GCATAGAAATTGCATCAACGCATATAGCGCTAGATCCTTGCTAGAGTCGAG
GCCGCCACCGCGGTGGAGCTCCAGCTTTTGTTCCTTTAGTGAGGGTTAAT
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CCTGGGGTGCCTAATGAGTGAGCTAACTCACATTAATTGCGTTGCGCTCAC
TGCCCGCTTTCCAGTCGGGAAACCTGTCGTGCCAGCTGCATTAATGAATCG
GCCAACGCGCGGGGAGAGGCGGTTTTCGTATTGGGCGCTCTTCCGCTTCCT
CGCTCACTGACTCGCTGCGCTCGGTTCGTTCGGCTGCGGCGAGCGGTATCAG
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ATTGTCTCATGAGCGGATACATATTTGAATGTATTTAGAAAAATAAACAAA
TAGGGGTTCCGCGCACATTTCCCCGAAAAGTGC

Figure 79b

GATCTTCAATATTGGCCATTAGCCATATTATTCATTGGTTATATAGCATAAA
 TCAATATTGGCTATTGGCCATTGCATACGTTGTATCTATATCATAATATGTA
 CATTATATTGGCTCATGTCCAATATGACCGCCATGTTGGCATTGATTATTG
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 CCCAACGACCCCCGCCATTGACGTCAATAATGACGTATGTTCCCATAGTA
 ACGCCAATAGGGACTTTCCATTGACGTCAATGGGTGGAGTATTTACGGTAA
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 gggctgcccgtgtgttcgtatatggaggtagtaagacctccctttacaacctaaaggcgagggaactgcccttgctattccaca
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Figure 30A

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AAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGA
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CTGCCGCTTACCGGATACCTGTCCGCCTTTCTCCCTTCGGGAAGCGTGGCG
CTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTCTGTTCTGCT
CCAAGCTGGGCTGTGTGCACGAACCCCCCGTTACGCCCCGACCGCTGCGCCT
TATCCGGTAACATATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGC
CACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGC
GGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAG
GACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAG
AGTTGGTAGCTCTTGATCCGGCAAAACAAACCACCGCTGGTAGCGGTGGTT-

FIGURE 30B

TTTTGTGTTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAA
 GATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAACGAAAACCTCA
 CGTTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATC
 CTTTTATCGGTGTGAAATACCGCACAGATGCGTAAGGAGAAAAATACCGCAT
 CAGGAAATTGTAAGCGTTAATAATTGAGAAGAACTCGTCAAGAAGGCGAT
 AGAAGGCGATGCGCTGCGAATCGGGAGCGGCGATACCGTAAAGCACGAGG
 AAGCGGTGAGCCCATTCGCCGCCAAGCTCTTCAGCAATATCACGGGTAGCC
 AACGCTATGTCCTGATAGCGGTCCGCCACACCCAGCCGGCCACAGTCGATG
 AATCCAGAAAAGCGGCCATTTTCCACCATGATATTCGGCAAGCAGGCATCG
 CCATGGGTGACGACGAGATCCTCGCCGTCGGGCATGCTCGCCTTGAGCCTG
 GCGAACAGTTCGGCTGGCGCGAGCCCTGATGCTCTTCGTCCAGATCATCC
 TGATCGACAAGACCGGCTTCCATCCGAGTACGTGCTCGCTCGATGCGATGT
 TTCGCTTGGTGGTTCGAATGGGCAGGTAGCCGGATCAAGCGTATGCAGCCG
 CCGCATTGCATCAGCCATGATGGATACTTTCTCGGCAGGAGCAAGGTGAG
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 CCGCTTCAGTGACAACGTCGAGCACAGCTGCGCAAGGAACGCCCGTCGTG
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 GACAGGTGCGTCTTGACAAAAAGAACCGGGCGCCCCCTGCGCTGACAGCCG
 GAACACGGCGGCATCAGAGCAGCCGATTGTCTGTTGTGCCCAGTCATAGCC
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 TTCAATCATGCGAAACGATCCTCATCCTGTCTCTTGATCAGAGCTTGATCC
 CCTGCGCCATCAGATCCTTGGCGGCGAGAAAGCCATCCAGTTTACTTTGCA
 GGGCTTGTCAACCTTACCAGATAAAAGTGCTCATCATTGGAAAAcattcaattcgt
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 TTCTTTCCGCCTCAGAAGGTACACAGGCGAAATTGTAAGCGTTAATATTTT
 GTTAAAATTGCGGTAAATTTTTGTTAAATCAGCTCATTTTTTAACCAATAG
 GCCGAAATCGGCAAAATCCCTTATAAATCAAAAGAATAGACCGAGATAGG
 GTTGAGTGTGTTCCAGTTTGGAAACAAGAGTCCACTATTAAAGAACGTGGA
 CTCCAACGTCAAAGGGCGAAAAACCGTCTATCAGGGCGATGGCCCAC

Figure 30C

GATCTTCAATATTGGCCATTAGCCATATTATTCATTGGTTATATAGCATAAA
TCAATATTGGCTATTGGCCATTGCATACGTTGTATCTATATCATAATATGTA
CATTTATATTGGCTCATGTCCAATATGACCGCCATGTTGGCATTGATTATTG
ACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTCATAGCCCATAT
ATGGAGTTCCGCGTTACATAACTTACGGTAAATGGCCCCGCTGGCTGACCG
CCCAACGACCCCCGCCATTGACGTCAATAATGACGTATGTTCCCATAGTA
ACGCCAATAGGGACTTTCATTGACGTCAATGGGTGGAGTATTTACGGTAA
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GGTCTATATAAGCAGAGCTCGTTTAGTGAACCGTCAGATCACTGAATTCTG
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Figure 31A

FIGURE 31B

TTTTGTGTTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAA
 GATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAACGAAAACCTCA
 CGTTAAGGGATTGTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATC
 CTTTTATCGGTGTGAAATACCGCACAGATGCGTAAGGAGAAAAATACCGCAT
 CAGGAAATTGTAAGCGTTAATAATTCAGAAGAACTCGTCAAGAAGGCGAT
 AGAAGGCGATGCGCTGCGAATCGGGAGCGGCGATACCGTAAAGCACGAGG
 AAGCGGTCAGCCCATTCGCCGCCAAGCTCTTCAGCAATATCACGGGTAGCC
 AACGCTATGTCCTGATAGCGGTCCGCCACACCCAGCCGGCCACAGTCGATG
 AATCCAGAAAAGCGGCCATTTTCCACCATGATATTCGGCAAGCAGGCATCG
 CCATGGGTACGACGAGATCCTCGCCGTCGGGCATGCTCGCCTTGAGCCTG
 GCGAACAGTTCGGCTGGCGCGAGCCCCCTGATGCTCTTCGTCCAGATCATCC
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 GTTAAAATTCGCGTTAAATTTTTGTAAATCAGCTCATTTTTTAACCAATAG
 GCCGAAATCGGCAAAATCCCTTATAAATCAAAAGAATAGACCGAGATAGG
 GTTGAGTGTTGTTCCAGTTTGGAAACAAGAGTCCACTATTAAAGAACGTGGA
 CTCCAACGTCAAAGGGCGAAAAACCGTCTATCAGGGCGATGGCCCCAC

Figure 31C

GATCTTCAATATTGGCCATTAGCCATATTATTCATTGGTTATATAGCATAAA
 TCAATATTGGCTATTGGCCATTGCATACGTTGTATCTATATCATAATATGTA
 CATTATATTGGCTCATGTCCAATATGACCGCCATGTTGGCATTGATTATTG
 ACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTCATAGCCCATAT
 ATGGAGTTCCGCGTTACATAACTTACGGTAAATGGCCCGCCTGGCTGACCG
 CCCAACGACCCCCGCCATTGACGTCAATAATGACGTATGTTCCCATAGTA
 ACGCCAATAGGGACTTTCCATTGACGTCAATGGGTGGAGTATTTACGGTAA
 ACTGCCCACTTGGCAGTACATCAAGTGTATCATATGCCAAGTCCGCCCCCT
 ATTGACGTCAATGACGGTAAATGGCCCGCCTGGCATTATGCCCAGTACATG
 ACCTTACGGGACTTTCTACTTGGCAGTACATCTACGTATTAGTCATCGCT
 ATTACCATGGTGATGCGGTTTTTGGCAGTACACCAATGGGCGTGGATAGCG
 GTTTGACTCACGGGGATTTCCAAGTCTCCACCCCATTGACGTCAATGGGAG
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 CGATCGCCCCGCCCGTTGACGCAAATGGGCGGTAGGCGTGTACGGTGGGA
 GGTCTATATAAGCAGAGCTCGTTTTAGTGAACCGTCAGATCACTGAATTCTG
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 TTAAGggcaccaataactgccttaaaaaaattacgccccgccctgccactcatcgagtagctgttgaattcattaagcat
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 ggattggctgagacgaaaaacatattctcaataaacctttagggaaataggccaggttttaccgtaacacgccacatctt
 gcgaatatatgtgtagaaactgccggaaatcgctggttattcactccagagcgatgaaaacgtttcagtttgctcatggaa
 aacggtgtaacaagggtgaacactatcccatatcaccagctcaccgtctttcattgccatacggaaattccggatgagcattc
 atcaggcggggcaagaatgtgaataaaggccggataaaacttggtcttatttttttaccggtctttaaaggccgtaatatcc
 agctgaacggctggttataggtacattgagcaactgactgaaatgcctcaaaatgttctttacgatgccattgggatataca
 acggttggtatataccagtgattttttctccatttagcttcttagctcctgaaaatctcgataactcaaaaaatacgcccggtag
 tgaatttttctattatggtgaaagttggaacctcttacgtgccgatcaacgtctcattttcgccaaaTTAATTAAAGG
 CGCGCCgctctcctggctaggagtcacgtagaaaggactaccgacgaaggaaacttgggtcgccggtgtgttctgat-

Figure 32A

atggaggtagtaagacctccctttacaacctaaggcgaggaaactgcccttgctattccacaatgtcgtcttacaccattgagt
cgtctccccttgggaatggcccctggaccggcccacaacctggcccgtaaggaggagtcattgtctgttatttcatggtctt
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GTCGATAGTGGCTCCAAGTAGCGAAGCGAGCAGGACTGGGCGGCGGCCAA
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GCATATAGCGCTAGATCCTTGCTAGAGTTCGAGATCTGTTCGAGCCATGTGAG
CAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGGCG
TTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAAATCGACGCTCA
AGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCC
CCCTGGAAGCTCCCTCGTGCGCTCTCCTGTTCCGACCCTGCCGCTTACCGG
ATACCTGTCCGCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATAGCTCA
CGCTGTAGGTATCTCAGTTCGGTGTAGGTGCTTCGCTCCAAGCTGGGCTGT
GTGCACGAACCCCCCGTTTCAGCCCGACCGCTGCGCCTTATCCGGTAACCTAT
CGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCC
ACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGT-

FIGURE 32B

TCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGGACAGTATTTGGTA
TCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTT
GATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGTGTTGCAAGC
AGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTT
CTACGGGGTCTGACGCTCAGTGGAAACGAAAACCTCACGTTAAGGGATTTTG
GTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTTTTATCGGTGTGA
AATACCGCACAGATGCGTAAGGAGAAAAATACCGCATCAGGAAATTGTAAG
CGTTAATAATTGAGAAGAACTCGTCAAGAAGGCGATAGAAGGCGATGCGC
TGCGAATCGGGAGCGGCGATAACCGTAAAGCACGAGGAAGCGGTCAGCCCA
TTCGCCGCCAAGCTCTTCAGCAATATCACGGGTAGCCAACGCTATGTCCTG
ATAGCGGTCCGCCACACCCAGCCGGCCACAGTCGATGAATCCAGAAAAAGC
GGCCATTTTCCACCATGATATTTCGGCAAGCAGGCATCGCCATGGGTCACGA
CGAGATCCTCGCCGTCGGGCATGCTCGCCTTGAGCCTGGCGAACAGTTCGG
CTGGCGCGAGCCCCTGATGCTCTTCGTCCAGATCATCCTGATCGACAAGAC
CGGCTTCCATCCGAGTACGTGCTCGCTCGATGCGATGTTTCGCTTGGTGGT
CGAATGGGCAGGTAGCCGGATCAAGCGTATGCAGCCGCCGCATTGCATCA
GCCATGATGGATACTTTCTCGGCAGGAGCAAGGTGAGATGACAGGAGATC
CTGCCCCGGCACTTCGCCCAATAGCAGCCAGTCCCTTCCCGCTTCAGTGAC
AACGTCGAGCACAGCTGCGCAAGGAACGCCCGTCGTGGCCAGCCACGATA
GCCGCGCTGCCTCGTCTTGACAGTTCATTACAGGGCACCGGACAGGTGCGTCT
TGACAAAAAGAACC GGCGCCCTGCGCTGACAGCCGGAACACGGCGGCA
TCAGAGCAGCCGATTGTCTGTTGTGCCAGTTCATAGCCGAATAGCCTCTCC
ACCCAAGCGGCCGGAGAACCTGCGTGCAATCCATCTTGTTCAATCATGCGA
AACGATCCTCATCCTGTCTCTTGATCAGAGCTTGATCCCCTGCGCCATCAG
ATCCTTGGCGGCGAGAAAGCCATCCAGTTTACTTTGCAGGGCTTGTC AACC
TTACCAGATAAAAGTGCTCATCATTGGAAAAcattcaattegtcgacctgaaattctaccggg
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gcgcacctgggtgcatgaccgcaagcccggtgctgacgccccccccacgacccgcagcgcccagaccgaaaggagcg
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GACTAATTGAGATGCATGCTTTGCATACTTCTGCCTGCTGGGGAGCCTGGG
GACTTTCCACACCCTAACTGACACACATTCCACAGCTGGTTCTTTCCGCCTC
AGAAGGTACACAGGCGAAATTGTAAGCGTTAATATTTTGTAAATTCGCG
TTAAATTTTGTAAATCAGCTCATTTTTTAACCAATAGGCCGAAATCGGC
AAAATCCCTTATAAATCAAAAAGAATAGACCGAGATAGGGTTGAGTGTGTT
CCAGTTTGGAAACAAGAGTCCACTATTAAGAACGTGGACTCCAACGTCAAA
GGGCGAAAAACCGTCTATCAGGGCGATGGCCAC

FIGURE 32C

GATCTTCAATATTGGCCATTAGCCATATTATTCATTGGTTATATAGCATAAA
TCAATATTGGCTATTGGCCATTGCATACGTTGTATCTATATCATAATATGTA
CATTTATATTGGCTCATGTCCAATATGACCGCCATGTTGGCATTGATTATTG
ACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTCATAGCCCATAT
ATGGAGTTCGCGTTACATAACTTACGGTAAATGGCCCCGCTGGCTGACCG
CCCAACGACCCCCGCCATTGACGTCAATAATGACGTATGTTCCCATAGTA
ACGCCAATAGGGACTTTCCATTGACGTCAATGGGTGGAGTATTTACGGTAA
ACTGCCCACTTGGCAGTACATCAAGTGTATCATATGCCAAGTCCGCCCCCT
ATTGACGTCAATGACGGTAAATGGCCCCGCTGGCATTATGCCCAGTACATG
ACCTTACGGGACTTTCTACTTGGCAGTACATCTACGTATTAGTCATCGCT
ATTACCATGGTGATGCGGTTTTTGGCAGTACACCAATGGGCGTGGATAGCG
GTTTGACTCACGGGGATTTCCAAGTCTCCACCCCATTGACGTCAATGGGAG
TTTGT TTTGGCACCAAAAATCAACGGGACTTTCCAAAATGTCGTAACAACTG
CGATCGCCCCGCCCCGTTGACGCAAATGGGCGGTAGGCGTGTACGGTGGGA
GGTCTATATAAGCAGAGCTCGTTTAGTGAACCGTCAGATCACTGAATTCTG
ACGACCTACTGATTAACGGCCAGATCTAAGCTAGCTTCCTGAAAGATGAAG
CTACTGTCTTCTATCGAACAAGCATGCGATATTTGCCGACTTAAAAAGCTC
AAGTGCTCCAAAGAAAAACCGAAGTGCGCCAAGTGTCTGAAGAACAACCTG
GGAGTGTGCTACTCTCCCAAAACCAAAAGGTCTCCGCTGACTAGGGCACA
TCTGACAGAAGTGGAATCAAGGCTAGAAAGACTGGAACAGCTATTTCTACT
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ACAAAGGTCAAAGACAGTTGACTGTATCGCCGGAATTCAGGTGAGTACTC
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ggcttcgggtgtacgcgggttaggagtcacctcaggatatagtagtttgcctttgcatagggagggggaaatgtagtcttatg
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caccagctcaccgtctttcattgccatacggaaattccggatgagcattcatcaggcggggcaagaatgtgaataaaggccgg
ataaaacttgtgcttattttctttacggcttttaaaaggccgtaatatccagctgaacgggtctggttatagggtacattgagc-

Figure 33A

aactgactgaaatgcctcaaaatgttctttacgatgccattgggataatacaacgggtggtatatccagtgattttttctccatttt
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ACAGGACGGGTGTGGTCGCCATGATCGCGTAGTCGATAGTGGCTCCAAGT
AGCGAAGCGAGCAGGACTGGGCGGCGGCCAAAGCGGTTCGGACAGTGCTCC
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CCAGGAACCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCC
CCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAAC
CCGACAGGACTATAAAGATACCAGGCGTTTTCCCCCTGGAAGCTCCCTCGTG
CGCTCTCCTGTTCCGACCCTGCCGCTTACCGGATACCTGTCCGCTTTCTCC
CTTCGGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGT-

FIGURE 33B

TCGGTGTAGGTCGTTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTT
CAGCCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCG
GTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAG
CAGAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTA
ACTACGGCTACACTAGAAGGACAGTATTTGGTATCTGCGCTCTGCTGAAGC
CAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCA
CCGCTGGTAGCGGTGGTTTTTTTGGTTTGCAAGCAGCAGATTACGCGCAGAA
AAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTC
AGTGGAACGAAAACTCACGTTAAGGGATTTTGGTCATGAGATTATCAAAA
AGGATCTTCACCTAGATCCTTTTTATCGGTGTGAAATACCGCACAGATGCGT
AAGGAGAAAAATACCGCATCAGGAAATTGTAAGCGTTAATAATTCAGAAGA
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CTCTTCGTCCAGATCATCCTGATCGACAAGACCGGCTTCCATCCGAGTACG
TGCTCGCTCGATGCGATGTTTTGCTTGGTGGTGAATGGGCAGGTAGCCGG
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GGCAGGAGCAAGGTGAGATGACAGGAGATCCTGCCCCGGCACTTCGCCCA
ATAGCAGCCAGTCCCTTCCCGCTTCAGTGACAACGTCGAGCACAGCTGCGC
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GTTTCATTACAGGGCACCGGACAGGTTCGGTCTTGACAAAAAGAACCGGGCGC
CCCTGCGCTGACAGCCGGAACACGGCGGCATCAGAGCAGCCGATTGTCTG
TTGTGCCCAGTCATAGCCGAATAGCCTCTCCACCCAAGCGGCCGGAGAACC
TGCGTGCAATCCATCTTGTTCAATCATGCGAAACGATCCCTCATCCTGTCTCT
TGATCAGAGCTTGATCCCCTGCGCCATCAGATCCTTGCGCGCGAGAAAGCC
ATCCAGTTTACTTTGCAGGGCTTGTC AACCTTACCAGATAAAAGTGCTCAT
CATTGGAAAAcattcaattcgtcgacctcgaaattctaccgggtaggggaggcgcttttcccaaggcagtcctgga
gcatgcgcttttagcagccccgctgggcacttggegtctacacaagtggcctctggcctcgacacattccacatccacggg
aggcgccaaccggctccgtttttgggtggcccttcgcgccaccttctactcctccctagtcagggaagtccccccgccc
cgcanctcgctcgtgagcagcgtgacaaatggaaatagcacgtctcactagtctcgtgcagatggacaagcaccgctga
gcaatggagcgggtaggcctttggggcagcgcccaatagcagctttgctccttcgcttttgggctcagaggctggnaa
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cattctgcacgcttcaaaagcgacgtctgccgctgttctcctctctcatctccgggctttcgacctgcacatctag
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cgtacgcacctcgccgcccgttcgcccactaccccgccacgcgcacacccgtcgaccggaccgcacatcgagcg
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cgcggtggcggtctggaccacgcccggagagcgtcgaagcgggggcggtgttcgcccagatcgggcccgcatggcc
gagltgagcggttccgggtggtcgccgcgagcaacagatggaaggcctcctggcgccgcaccgggcccgaaggagcccg
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cctgacgcccgcacccgacgcgcccgaaggagcgcacgacctatgcagatggcactgggcagg
taaglatcaaggtagcGCCCCCTAACCTGGTTGCTGACTAATTGAGATGCATGCTTT
GCATACTTCTGCCTGCTGGGGAGCCTGGGGACTTTCCACACCCCTAACTGAC
ACACATTCCACAGCTGGTTCTTTCCGCCTCAGAAGGTACACAGGCGAAATI
GTAAGCGTTAATATTTTGTAAAATTTCGCGTTAAATTTTGTAAATCAGC-

Figure 330

TCATTTTTTAACCAATAGGCCGAAATCGGCAAAATCCCTTATAAATCAAAA
GAATAGACCGAGATAGGGTTGAGTGTTGTTCCAGTTTGGAACAAGAGTCC
ACTATTAAAGAACGTGGACTCCAACGTCAAAGGGCGAAAAACCGTCTATC
AGGGCGATGGCCCAC

FIGURE 33D

tcaacgacaggagcacgatcatgcgcacccgtggccaggacccaacgctgcccagatgcgcccgtgcccgtgctgg
agatggcgggacgcgatggatgttctgccaaaggttggttgccgattcacagttctccgcaagaattgattggctccaatt
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Figure 34A

actgagggtaatttgcacagtttgcgtttccttcagcctgcatggattttctcatacttttgaactgtaattttaaggaagc
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Figure 34B

GATCTTCAATATTGGCCATTAGCCATATTATTCATTGGTTATATAGCATAAA
 TCAATATTGGCTATTGGCCATTGCATACGTTGTATCTATATCATAATATGTA
 CATTATATTGGCTCATGTCCAATATGACCGCCATGTTGGCATTGATTATTG
 ACTAGTTATTAATAGTAATCAATTACGGGGTTCATTAGTTCATAGCCCATAT
 ATGGAGTTCCGCGTTACATAACTTACGGTAAATGGCCCGCCTGGCTGACCG
 CCCAACGACCCCCGCCCATTGACGTCAATAATGACGTATGTTCCCATAGTA
 ACGCCAATAGGGACTTTCCATTGACGTCAATGGGTGGAGTATTTACGGTAA
 ACTGCCCCACTTGGCAGTACATCAAGTGTATCATATGCCAAGTCCGCCCCCT
 ATTGACGTCAATGACGGTAAATGGCCCGCCTGGCATTATGCCAGTACATG
 ACCTTACGGGACTTTCTACTTGGCAGTACATCTACGTATTAGTCATCGCT
 ATTACCATGGTGATGCGGTTTTTGGCAGTACACCAATGGGCGTGGATAGCG
 GTTTGACTCACGGGGATTTCCAAGTCTCCACCCCATGACGTCAATGGGAG
 TTTGTTTTTGGCACCAAAATCAACGGGACTTTCCAAAATGTCGTAACAACGTG
 CGATCGCCCCGCCCCGTTGACGCAAATGGGCGGTAGGCGTGTACGGTGGGA
 GGTCTATATAAGCAGAGCTcggttagtgaaccgtcagatcactgaattctgacgacactactgattaacggc
 catagaggcctcctgcagaactgtcttagtgacaactatCGATTTCACACATTATACGAGCCGAT
 GTTAATTGTCAACAGCTCATGCATGACGTCCCGGGAGCAGACAAGCCCCGacc
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 AAGAGAGGCCTATCTGGCCAGTTAGCAGTCAAGAAAAGAAGTTTAAGAGA
 GCCGAAACAAGCGCTCATGAGCCCGAAGTGGCGAGCCCGATCTTCCCCAT
 CGGTGATGTGCGCGATATAGGCGCCAGCAACCGCACCTGTGGCGCCGGTG
 ATGCCGGCCACGATGCGTCCGGCGTAGAGGATCCACAGGACGGGTGTGGT
 CGCCATGATCGCGTAGTCGATAGTGGCTCCAAGTAGCGAAGCGAGCAGGA
 CTGGGCGGGCGGCCAAAGCGGTGCGACAGTGCTCCGAGAACGGGTGCGCAT
 AGAAATTGCATCAACGCATATAGCGCTAGATCCTTGCTAGAGTCGAGATCT
 GTCGAGCCATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAG
 GCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCCTGACGAGCATCAC
 AAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAG
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 CCTGCCGCTTACCGGATACCTGTCCGCTTTCTCCCTTCGGGAAGCGTGGC
 GCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTCTGTCG
 CTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTTCAGCCCGACCGCTGCGC
 CTTATCCGGTAACCTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATC
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 GCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAA
 GGACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAA
 GAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTT
 TTTTTGTTTGCAAGCAGCAGATTACGCGCAGAAAAAAAGGATCTCAAGAA
 GATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAACGAAAACCTCA
 CGTTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATC
 CTTTTatcggtgtgaaataccgcacagatgcgtaaggagaaaataccgcacaggaattgtaagcgtaataattcag
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 gcaaggaacgcccgtcgtggccagccacgatagccgctgcctcgttcgttcattcagggaacccggacaggtc-

Figure 35A

ggctctgacaaaaagaaccgggcccctgcgctgacagccggaacacggcgcatcagagcagccgattgtctgtgt
gcccagtcatacggaatagcctctccaccaagcgccggagaacctgcgtgcaatccatctgttcaatcatgcgaac
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CCAGGCTCCCCAGCAGGCAGAAAGTATGCAAAGCATGCATCTCAATTAGTCA
GCAACCAGGTGTGGAAAGTCCCCAGGCTCCCCAGCAGGCAGAAAGTATGCA
AAGCATGCATCTCAATTAGTCAGCAACCATAGTCCCGCCCCCTAACTCCGCC
CATCCCGCCCCCTAACTCCGCCCAGTTCCGCCCATTTCTCCGCCCATGGCTG
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GCTATTCGGCTATGACTGGGCACAACAGACAATCGGCTGCTCTGATGCCGC
CGTGTTCCGGCTGTCAGCGCAGGGGGCGCCCGTTCTTTTTGTCAAGACCGA
CCTGTCCGGTGCCCTGAATGAACTGCAGGACGAGGCAGCGCGGCTATCGT
GGCTGGCCACGACGGGCGTTCCTTGCGCAGCTGTGCTCGACGTTGTCACTG
AAGCGGGAAGGGACTGGCTGCTATTGGGCGAAGTGCCGGGGCAGGATCTC
CTGTCATCTCACCTTGCTCCTGCCGAGAAAGTATCCATCATGGCTGATGCA
ATGCGGCGGCTGCATACGCTTGATCCGGCTACCTGCCCATTCGACCACCAA
GCGAAACATCGCATCGAGCGAGCACGTACTCGGATGGAAGCCGGTCTTGT
CGATCAGGATGATCTGGACGAAGAGCATCAGGGGCTCGCGCCAGCCGAAC
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ACCCATGGCGATGCCTGCTTGCCGAATATCATGGTGGAAAATGGCCGCTTT
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CTTTCCACACCCTAACTGACACACATTCCACAGCTGGTTCTTTCCGCCTCAG
AAGGTACACAGGCGAAATTGTAAGCGTTAATATTTTGTTAAAATTCGCGTT
AAATTTTTGTTAAATCAGCTCATTTTTTAACCAATAGGCCGAAATCGGCAA
AATCCCTTATAAATCAAAAGAATAGACCGAGATAGGGTTGAGTGTTGTTCC
AGTTTGGAACAAGAGTCCACTATTAAAGAACGTGGACTCCAACGTCAAAG
GGCGAAAAACCGTCTATCAGGGCGATGGCCCCAC

FIGURE 35B



FIGURE 36

GATCTTCAATATTGGCCATTAGCCATATTATTCATTGGTTATATAGCATAAA
TCAATATTGGCTATTGGCCATTGCATACGTTGTATCTATATCATAATATGTA
CATTTATATTGGCTCATGTCCAATATGACCGCCATGTTGGCATTGATTATTG
ACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTCATAGCCCATAT
ATGGAGTTCGCGTTACATAACTTACGGTAAATGGCCCGCCTGGCTGACCG
CCCAACGACCCCCGCCCATGACGTCAATAATGACGTATGTTCCCATAGTA
ACGCCAATAGGGACTTTCCATTGACGTCAATGGGTGGAGTATTTACGGTAA
ACTGCCCACTTGGCAGTACATCAAGTGTATCATATGCCAAGTCCGCCCCCT
ATTGACGTCAATGACGGTAAATGGCCCGCCTGGCATTATGCCCAGTACATG
ACCTTACGGGACTTTTCTACTTGGCAGTACATCTACGTATTAGTCATCGCT
ATTACCATGGTGTATGCGGTTTTGGCAGTACACCAATGGGCGTGGATAGCG
GTTTGACTCACGGGGATTTCOAAGTCTCCACCCCATGACGTCAATGGGAG
TTTGTTTTGGCACCAAAATCAACGGGACTTTCCAAAATGTCGTAACAACTG
CGATCGCCCGCCCCGTTGACGCAAATGGGCGGTAGGCGTGTACGGTGGGA
GGTCTATATAAGCAGAGCTCGTTTAGTGAACCGTCAGATCACTGAATTCTG
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Figure 37A

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GACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAG
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Figure 37B

TTTTGTGTTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAA
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 CAGGAAATTGTAAGCGTTAATAATTGAGAAGAACTCGTCAAGAAGGCGAT
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 AACGCTATGTCCTGATAGCGGTCCGCCACACCCAGCCGGCCACAGTCGATG
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 GTTGAGTGTGTTCCAGTTTGGAAACAAGAGTCCACTATTAAAGAACGTGGA
 CTCCAACGTCAAAGGGCGAAAAACCGTCTATCAGGGCGATGGCCAC

Figure 37C